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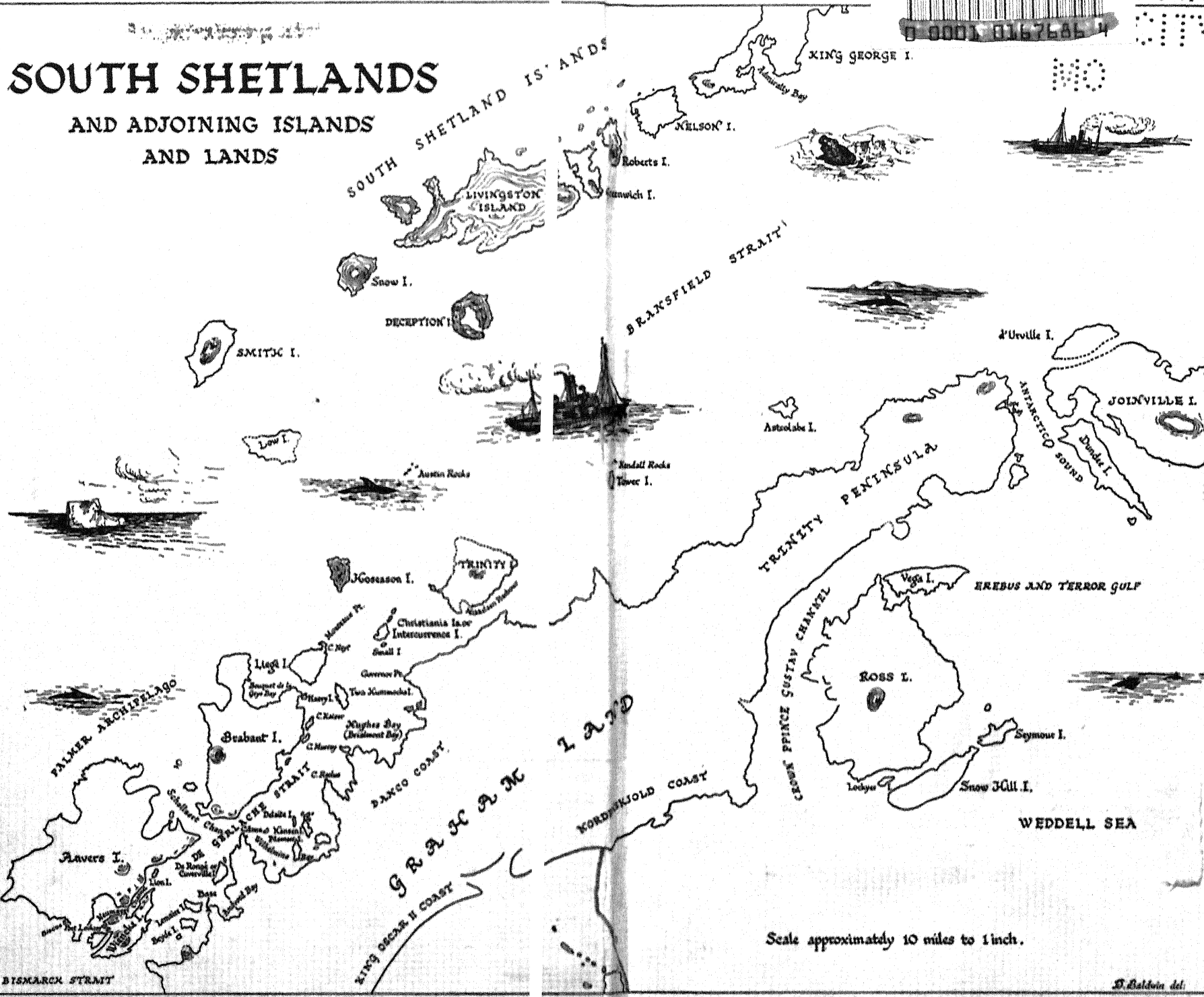

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TWO MEN IN THE ANTARCTIC

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1. *Antarctic grandeur*

TWO MEN IN THE ANTARCTIC

An Expedition to Graham Land

1920–1922

BY

THOMAS WYATT BAGSHAWE

WITH A FOREWORD BY

FRANK DEBENHAM

O.B.E., M.A.

Professor of Geography at the University of Cambridge, and Director of the Scott Polar Research Institute, Cambridge

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1939

To

MY COMPANION
IN OUR LITTLE ADVENTURE
I DEDICATE THIS
BOOK

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FOREWORD

The use of a preface is that it brings the reader to the right state of mind for reading the book, fashioning, as it were, the right pair of spectacles for him before he begins.

This book then is about two young men who possessed that quality which was so annoying to the great Napoleon, of not having the sense to know when they were defeated.

They were the juniors of an expedition of four men, the seniors both having had previous polar experience. After reaching the Antarctic somewhat precariously and being placed at a disadvantage from the standpoint of both position and finance, the expedition reviewed itself and the seniors decided to abandon the venture. Whether the juniors 'agreed' to continue it or declined to abandon it is for the reader to decide for himself, but it is certainly true that the tough whaling captains did their best to dissuade them from their folly and the geographical world at large was considerably perturbed when they heard of it, many prophesying disaster.

What was the measure of their folly? The Antarctic is not a place to be trifled with; an expedition must be well housed, well found and well manned. Yet here were two young and inexperienced men proposing to winter on a tiny islet in the Antarctic in a disused boat with a handful of instruments and a scanty stock of provisions.

They of course did not look at it in that way at all and still refuse to do so. They had come to sample the Antarctic and they were not going back till they had done so;

they had a hammer and a saw, packing cases and odd nails, lots of ideas and whole shiploads of hope. For luxuries they had an ample supply of unreliable matches, plenty of cigarettes and boxes of *crème de menthe* sweets. There was a supply of whisky it is true, but that was kept as a present for their good friends the whalers when they returned to pick them up.

So they started to confound the critics by not merely existing under hard conditions, but by carrying out scientific work as well.

The fact that a good proportion of this book consists of scientific appendices of the work done is not chance or bad management on the part of the publishers. Those two men, a junior mercantile officer in the early twenties and a very junior scientist of 19, carried out that work to the best of their ability. They were not going to have a book published about their cheerful misery unless it contained an account of their work, the real reason for their being there. Any advice on the part of the writer of this preface as to having less science and more misery was simply ignored or scorned.

Actually these appendices are very readable as well as useful, but those who have had any experience of such field-work will find it hard to believe that two men, kept more than busy maintaining themselves and their living quarters, should produce that mass of material.

Not content with a meteorological log, an ice log and a natural history log, all needing constant attention and involving shortage of sleep, they cheerfully embarked on a tidal log. Even under pleasant conditions most of us would think twice before undertaking a set of hourly

observations for a whole month, one always at work while the other slept.

But in this case there were just a few other jobs for that month as well, such as their own cooking, the dogs to be fed, the leaky hut to be mended, snow to be cleared, the two-hourly weather observations to be entered.

Never were there such devoted scientists: after many months of seal stew, wholesome enough but desperately boring, they saw the penguins around them beginning to lay eggs and their mouths began to water, but, 'Lester very considerately and without hesitation put aside any idea of eating the eggs until there were sufficient for observation purposes...we felt that the scientific work should have preference'. And so on and so forth.

What a comment on the polar *ennui* of last century travel books, what a lesson to the large scientific expeditions! Yet the writer of this preface had the greatest difficulty in persuading the author to write this book at all.

There is a moral in this story and a notable example, plain for all men to see—but two people steadily refuse to see it. They say that they simply did what they went there to do, and there's no more to say about it.

The Antarctic Club has an annual dinner in London at which there is a pleasant custom of the President taking wine with the members of every expedition represented, in chronological order. At each announcement by the toast-master a group of somewhat grizzled veterans rises with grins and drinks with plaudits from the

remainder. When the name of the Graham Land Expedition of 1920–22 was called, two shy young men rose at the word to be received with double applause, and not a little wonder, by the veterans. Now that, at long last, their story is published, readers will be able to echo that applause and share that admiration. However stoutly those two may deny it, they have deserved well of their country and of their temporary profession.

FRANK DEBENHAM

THE SCOTT POLAR RESEARCH
INSTITUTE

July 1939

INTRODUCTION

The object of the Expedition to Graham Land, 1920–22,[1] an account of which is given in the following pages, was to extend the discoveries of the Swedish Antarctic Expedition of 1901–3 under Dr Otto Nordenskjöld,[2] by continuing the mapping of the western coast-line of the Weddell Sea. It was hoped, if possible, to link up the point of the termination of the Swedish Expedition's survey with the Caird Coast discovered by Sir Ernest Shackleton in 1915.

The original members of the Expedition were:

J. L. COPE, *Leader.*
G. H. WILKINS, *Second-in-command.*
M. C. LESTER, *Lieut. R.N.R., Navigator.*
T. W. BAGSHAWE, *Geologist.*

Transport was arranged for the members of the expedition together with food and equipment in various whaling factories by the courtesy of certain Norwegian whaling companies operating in the South Shetlands.

Cope left from Norway and picked up Wilkins in America. Lester and the writer left with the bulk of the stores on separate boats from Cardiff at the beginning of October 1920. We arrived at our meeting place, Deception Island, at various times, all being there by Christmas Eve.

[1] For the official account of the Expedition see *Geographical Journal*, Vol. LXII, pp. 174 *et seq.*
[2] Nordenskjöld, O. *Antarctica.*

It had been arranged with the whaling captains that we should be landed at Hope Bay in Antarctic Sound which lies between Louis Philippe Land, or, as it is called on the Admiralty chart, Trinity Peninsula, and Joinville Island, provided that ice-conditions proved favourable. From there we proposed to transfer part of our stores and equipment to Snow Hill Island, some thirty or forty miles farther south, and use the hut previously occupied by the Swedish Antarctic Expedition. This was to be the base for the sledge journey along the coast of the Weddell Sea.

Unfortunately for the success of our aims, the sight of distant ice around Hope Bay made the whalers reluctant to lose valuable time in taking us in that direction, with the possibility of having to return if the ice proved too dangerous, so they offered us the alternative of being landed on the western side of Graham Land. This was accepted and we established our base on 12 January 1921. Three whaling-catchers were employed for our transport from Deception Island.

We called the place where we landed Water-Boat Point. It is on the coast of Danco Land (part of Graham Land), in latitude 64°48′ S., and longitude 62°43′ W. We wanted to reach the limit of Nordenskjöld's exploration in the Weddell Sea, only thirty or forty miles to the east, but between that point and our base lay a range of mountains varying from 2000 to 6000 feet in height.

We made several life-boat journeys to explore the coastline about us, but it soon became apparent that the only communication with the other side was over the mountain range. Although we could have crossed it

carrying food and equipment on our backs, or even on a very small sledge, we could have made no extensive journeys after we had reached our goal.

On 26 February it was agreed that the leader should return to civilization, secure a small suitable vessel, and come back the following spring to transfer the base to the original place chosen, that is to say, to Hope Bay. Wilkins, second-in-command, decided to leave the expedition and return with him. Lester and I volunteered to remain for the winter to carry on as far as possible the scientific work which we had started.

The alteration in our plans made it necessary to find one of the whalers to take Cope and Wilkins as far as Montevideo on their way home.

Cope, Wilkins and Lester therefore left in the life-boat for Nansen Island in Wilhelmina Bay, leaving me at the base, but after reaching Nansen Island they were obliged to proceed south again as far as Port Lockroy before they found a factory, the *Solstreif*, which could take them.

After almost a week's absence (the ninety miles' journey in the life-boat took them four days), a catcher brought them back to Water-Boat Point.

On their return Cope and Wilkins collected their belongings, and bade farewell to Lester and me on 4 March. On the following day Captain O. Andersen of the *Svend Foyn I*, who was about to leave for home, visited us and promised that if the leader was unable to procure a ship he himself would pick us up at the first possible opportunity the following season. We little realized at the time that there might be a possibility of

the whaling ships not coming down the following season, a situation which nearly developed on account of difficulty in disposing of the season's oil. This threatened complication naturally worried our people in England, and would have troubled us had we not been happily ignorant of it.

The leader was unable to procure a vessel, but Captain Andersen relieved us on 13 January 1922.

Three months were spent with the whalers at Nansen Island before we started the journey home. We called at the Falkland Islands and Montevideo on our way and finally discharged the cargo of whale oil at Pensacola, near New Orleans, in the Gulf of Mexico. We sailed in Andersen's ship, the *Svend Foyn I*, as far as her home port at Sandefjord in Norway. Then we left her and reached England on 16 June 1922.

This book is an account of the period between our departure from the Falkland Islands on the voyage down to the time when we left the Antarctic. It makes no pretence at being more than a simple, unvarnished account of our experiences, and was written in the hope that it may be of some small assistance to any expeditions which may follow ours. It tells of the bright times as well as the dull ones to dispel the popular idea that the Antarctic is a place only of grim hardships amid the relentless elements. For this reason fairly detailed weather reports are given in an appendix; it is so easy in writing an account such as this to mention only the bad weather and forget the good. To those who visit the Antarctic, especially during the winter months, and who have the misfortune to live in the rather primitive conditions that

we did, it will be useful to know the sort of weather that may be expected. We ourselves found the reports of the Charcot expeditions most helpful. It may not be cheering to know that bad weather lies ahead, but it does enable preparations to be made to meet it.

For any nautical terms wrongly used, I crave the reader's pardon; I am but a landlubber!

We learnt one lesson that is worthy of mention. In the early days at Water-Boat Point we laid in a supply of seal-meat for the winter, but seals occur at all times of the year and all that was necessary was a small emergency stock.

We cannot claim any notable results as the outcome of our work, though perhaps the work we did will not be without use for the reference of future expeditions.

It may be wondered why only casual mention is made of our neighbours, the penguins, throughout this book. The reason for this is that a recitation of their habits would occupy a whole volume, and as space is limited in this book it was thought better to make no more than passing reference to them and refer the interested reader to a memoir recently published by the Zoological Society of London[1] dealing entirely with them.

It is perhaps worth recording that we were the first British party to winter in this part of the Antarctic, and the smallest that has ever been South. We had no tinned meats and lived mainly on the food which nature had provided—penguins and seals; thus we avoided the dreaded scurvy.

To me the experience of visiting the Antarctic was one

[1] Zoological Society of London, *Transactions*, 1938, Vol. XXIV, Part 3.

of sheer delight; never in my wildest youthful hopes had I expected the realization of such a dream. In these days, when life is a rush and freedom from worry is almost unknown, it is good to look back upon a time when the affairs of the world were closed to us and when money had no utility. Our chief trouble was lack of knowledge as to the welfare of those at home. We had no wireless, and in consequence were completely cut off from the rest of the world.

My companion in this adventure was one of the best and I shall always remember Lester with happy thoughts. As I write, memories are conjured up of the pleasant hours we had together, the laughter of happiness, the help and condolence in times of trial and tribulation. A few years my senior and perhaps a little slighter in build, he was an interesting and congenial companion. There was always a certain jaunty attitude about him. He made a more dashing explorer than I, more of the Captain Kettle breed, with his pointed nautical beard and well formed moustache in contrast with my 'farmer Giles' fringe. In dress, too, he was always neater than I. He even sported a scarf. If I remember correctly, it was known, indelicately, as 'the sweat rag'. And he taught me, as a sailor would, to be tidy, to 'stow things away' in case they should 'come in handy'. Even now I am loathe to throw away a bent nail, an end of string, or a piece of brown paper which might 'come in...'. Whenever I see a piece of sail canvas or a block and tackle I always think of him, for he understood their mysteries. But my happiest memory will always be of his cheery good-humour. On those dismal days when

things had gone all wrong and we stared at each other in rueful dismay, a quizzical smile would creep over his face and expand into a broad grin so infectious that we would both burst into hearty laughter. His sense of humour never deserted him even in the most trying moments; nor did it ever fail to infect me, and it helped us both through many an unpleasant experience.

This introduction would be incomplete without acknowledgment of the kindness of the owners and the officers of the whale factories with whom we came in contact. Especially would I mention the late Captain O. Andersen of the *Svend Foyn I*, to whom we owe a debt of gratitude which we can never repay. His whaling days are, alas, over, and he has joined those others who in the course of their normal routine of life have been in their unobtrusive way great explorers.

T. W. B.

Chapter I

TO THE ANTARCTIC

Our visit to the Falkland Islands, which we reached on 14 November 1920, was brief; actually we spent a night and part of a day at Port Stanley, the capital. There was just time for a glimpse of one of the 'stone-rivers' near Sapper's Hill, and a visit to Government House. After thirty-eight days at sea I felt that for a while I was back in my own country. The people were kind—one of them, Mr A. Hardy of the Kelpers' Store, put me up for the night and entertained me most generously. After we had weighed anchor in Port William and the Falklands had gradually faded from sight, I could not help feeling a little sad and lonely. It was perhaps excusable, for I was young, nearing my twentieth birthday, and though the men on board the *Svend Foyn I* had been extremely kind to me, to them I was, after all, a foreigner.

By half-past eight on the evening of our departure all that could be seen of the Islands was the flash of the lighthouse, and as this slowly disappeared I wondered if and when I should see those homely folk again.

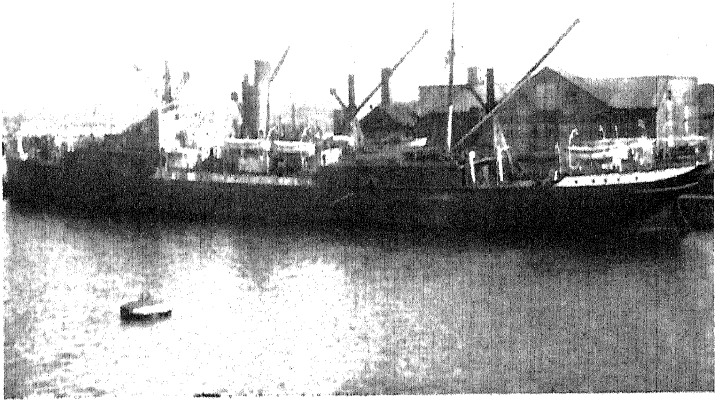
Our whale 'catchers', the *Graham*, the *Selvik*, and the *Scott*, which we had picked up at Montevideo, followed us. Our crew, about eighty men, a mixed company of Norwegians, Swedes and Danes, began to think of the hard work ahead of them. Perhaps they longed, as I did, for a change from the monotony of looking at the sea.

By the following afternoon we were over the Burdwood Bank. A few albatross still followed in our wake-wise, determined-looking birds. So far the weather was quite pleasant though a little chilly towards the latter part of the day. We were glad of clear weather, for at any time we were likely to meet icebergs; we might be lucky and get to Deception Island without hindrance, or, on the other hand, we might be held up for a week or more by ice.

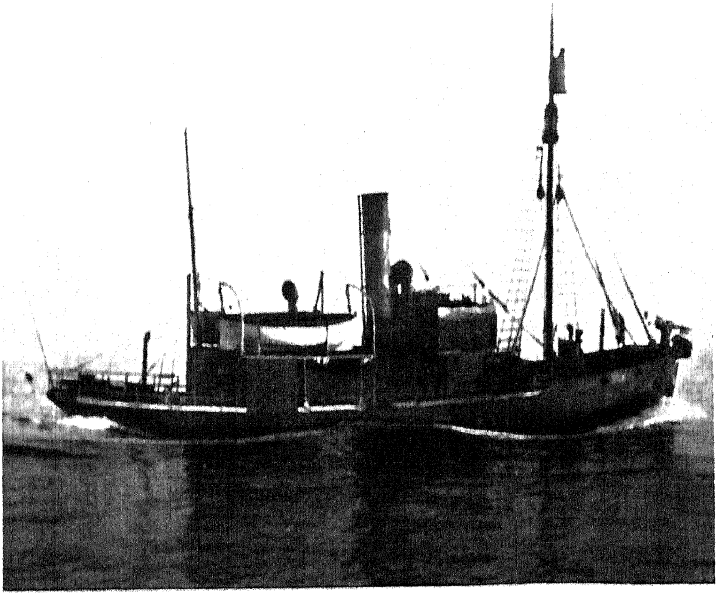
The next day, 17 November, was beautifully sunny, warm enough in the morning for us to sit about on deck. After lunch a south wind sprang up and caused a fall in temperature. We were still able to steam full speed ahead, which on our old ship was only nine knots.

At midday on the 18th our position was Lat. 60°32′ S., Long. 60°15′ W. Throughout the day the weather had been cold and increasingly foggy, so that by coffee time (3.30 p.m.) it was necessary to stop the engines owing to the danger of encountering ice. The temperature dropped to freezing, and, with the colder weather, a variety of garments began to appear. Most of the officers donned woollen trousers, purchased from the universal provider, the slop chest. Coarse woollen sweaters were also popular and the favourite head-dress was a helmet made of soft black leather lined with fur, with flaps to let down to protect the ears.

At noon on the 19th we were in Lat. 61°58′ S., Long. 61°56′ W. Snow fell during most of the day and consequently we were unable to make much progress. We were forced to stop altogether in the early evening when a few miles off Smith Island. Poor visibility made



2. *The* 'Svend Foyn I'



3. *One of the* 'Svend Foyn's' *catchers*

the officers of the *Svend Foyn I* uncertain of the identity of the island, so two of the attendant 'catchers' were sent close to it to make sure.

At 7 a.m. the next day we were to the west of Snow Island and could just see Deception Island in the distance. There was little ice about, only a very small weathered iceberg and a few other fragments—a great relief to those in charge; on some trips ships have been kept waiting about before they could reach Deception Island. Two hours later we ran into a low fog which necessitated one or two stops and delayed us a little.

We steamed into Whalers' Bay about midday, passing through Challenger Pass, which is rather narrow, and keeping near the north side of the pass to avoid the shallows. We found the *Ørn II* already at anchor, but Lester, who was living on board her, was out whaling. In the afternoon the *Ronald* arrived with Mr J. E. Hamilton, the magistrate from the Falklands, on board.

Before I go any farther, it would be as well to explain briefly the method of whaling employed in these regions.[1]

There were two kinds of ships involved, first what were known as 'floating factories' and secondly 'whalers' or, as more generally called, 'catchers'. The former were old cargo boats converted into factories for producing oil from whales and storing it. Some operated from Deception Island, others from South

[1] My whaling notes must be taken as applying only to the seasons when we were in the Antarctic, that is to say, 1920–21 and 1921–22. Whaling methods have altered now; Deception Island is no longer used as a harbour by whalers and the floating factories actually cut up the whales on the high seas.

Georgia and one, the *Gouvernor* was at Admiralty Bay (King George Island).

The following 'floating factories' had arranged to use the harbour at Deception Island for the early part of this season. They would go to one of the more southerly harbours, such as at Nansen Island, later.

S/S *Bombay*	2040	tons	net register
Ørn II	2757	,,	,,
Solstreif	3409	,,	,,
Svend Foyn I	2416	,,	,,
Thor I	2655	,,	,,

In addition to these there was a larger boat, the *Ronald*, which also owned a factory ashore; but more about this later.

My own particular factory, the *Svend Foyn I*, belonged to the Southern Whaling Company and carried a total crew of one hundred and ten men, of whom eighty were employed on the factory and ten on each of the three 'catchers'. She had fourteen large meat boilers and ten blubber boilers and could carry about 25,000 barrels of oil. She could try out 3000 barrels a week at full capacity.

Each factory had three 'catchers' attached to it. These caught the whales. The *Svend Foyn's* catchers were the *Graham*, the *Selvik* and the *Scott*. They were small ships of between 150 and 180 tons gross, having a length of about 105 feet, a beam of about 20 feet and a draught of 12 feet at the stern and 2½–3 feet less at the bow to give greater facility in turning. Each was equipped with a 500 H.P. engine capable of developing a speed of from 12 to

15 knots. A catcher carried in addition to its bunkers of coal, 960 fathoms of main whale line (6½ inches circumference) distributed half on each side. Normally the catchers spent the Antarctic winter at Montevideo where they were refitted for the next season unless large repairs were contemplated, in which case they would accompany the parent ship back to Norway.

The factories were all anchored in Whalers' Bay with their sterns about 40 yards from the shore; motor boats or shallow Norwegian 'prams' were used to get ashore and to pay visits to other ships.

It did not take long for our catchers to get to work and by late evening the *Graham* arrived from the Bransfield Strait or the 'Straits' as we called it, with a Blue Whale (*Balaenoptera musculus*) in tow.

Deception Island, where we were to await the arrival of the other members of the Expedition, is a very curious island. It forms one of the South Shetland group which lie in a north-east and south-west direction roughly between latitudes 61° and 63° South and parallel to the coast of North Graham Land. The island itself lies in Lat. 63° S., and Long. 60°35′ W., and is a nearly extinct volcano, into the crater of which the sea has broken through the Challenger Pass. The latter is a narrow breach, the north side an almost vertical cliff about 800 feet in height. The island is shaped like a ring with an inner circumference of about 5 miles and an outer one of about 8 miles. It is very mountainous, and in one place, Mt Pond, rises up to 1890 feet.

By the 23rd Lester had returned from his whaling trip, so I paid him a visit. Afterwards, as the day was fine,

I took a walk on shore to collect geological specimens. From a collecting point of view, Deception Island is almost ideal, as the rocks are liberally exposed and of a reasonably soft nature. Except near the entrance to the harbour, the shore around Whalers' Bay is low and rises in a gentle slope to the ridge behind. In one place the flat shore and slope extend to a width of 2000 feet, and are composed of angular fragments of volcanic cinders and ashes, rather resembling fine coke. Over the surface are scattered large boulders, mostly consisting of the yellow tuff rock found on the top of the hill or ridge. Snow-drifts are numerous on the lee side of these boulders. A good deal of lichen occurs on the rocks, and many empty limpet shells, left by the sea-birds, lie about. The shore is very warm near the anchorage of the whaling factories owing to the existence of fumaroles, present-day evidence of the volcanic nature of the island. It seems strange to see water at a temperature of about 140° F., running into the harbour, the water in which is about 33° F. Bubbles of gas can also be seen rising from the ground in the vicinity of the fumaroles.

After supper, the captain, the steward, the chief engineer, and the third officer took me to a penguin rookery on the south side of Challenger Pass. We made the journey by motor boat, and used a pram to get ashore. The walk over the slippery ice seemed rather hazardous to one not accustomed to it, but to see a penguin rookery for the first time was ample repayment. For real comedy, with actors as funny as those in any theatre, give me a penguin rookery; it is unfair to judge the little fellows by the rather sorry-looking individuals

in zoos. The rookery which we visited was a small one, inhabited by Ringed or Antarctic Penguins (*Pygoscelis antarctica*). The first thing that strikes one about a penguin rookery is the fearful noise which goes on the whole time; the second, the odour: in fact, these two characteristics enable one to locate a rookery long before it can be seen. This rookery was reminiscent of a farm-yard on a wet winter's day. The Ringed Penguins, who prefer the higher ground for their nests, had quite a long way to go down the slope to reach the sea. Sometimes they attempted to run, or rather waddle, more quickly, but they found this difficult and usually toppled over and had to continue the rest of the journey toboggan-wise, propelled along the ground by their flippers.

I had some difficulty in getting to the rookery at all. Unfortunately I was never made for mountaineering; whenever I look over a cliff my whole body quakes and perspiration appears on my brow, however cold the day may be. My heart sank when a basket of eggs was allotted to me to carry back to the ship, for I knew that a mishap would bring anything but sympathy from my companions who could climb about like mountain goats. However, we arrived safely back at the ship and handed over our spoils to the cook for the next day's breakfast. The eggs, which are about the size of ducks' eggs, are quite good to eat when boiled, although the slimy, transparent albumen does not look appetizing. They are really most palatable in the form of omelettes, scrambled or fried. If boiled, they take about half-an-hour to cook.

As work on board got into full swing, the ship looked

a disgusting sight and had a still more disgusting smell. The decks were soon covered with a mixture of whale oil, blood and coal dust. To pass forward there were two alternatives, either to go by way of the top deck and wade through slush with the risk of slipping down in it all, or to go by way of the lower deck with drops of blood and fat splashing upon you through the planks above. The first journey I made was by the latter route, foolishly enough without a hat. I thought that the moisture dripping on to my head was water until I found out, to my horror, that it was whale blood. The smell of it all was awful.

Thousands of Cape Pigeons (*Daption capense*) flew and swam around the carcases, fighting more than eating. Two would often fight over the possession of a whole carcase, so occupied that they could easily be caught while they were paddling about. Sometimes they dived down below the water after a morsel thrown overboard. In addition there were hundreds of the dainty little Wilson's Petrels (*Oceanites oceanicus*) skimming the surface of the water, as well as Dominican Gulls (*Larus dominicanus*) and Brown Skuas (*Catharacta skua*).

The *Ronald* had, in addition to the usual equipment for dealing with whales on board, a factory on shore which had not been used since the 1916–17 season. This, although in rather a bad condition, had been brought into use again for this season, and, by the provision of a slipway to the shore, the whale bodies could be hauled up on land and cut up there. This factory, as well as extracting oil, also made artificial manure from the parts which would otherwise have been wasted. The other

ships using the harbour dealt with their whales from the ship and only extracted the oil. Consequently when these ships had finished with their whales, the carcases and other refuse were allowed to float around them. The stench from the masses of intestines, stomachs and livers was too revolting to be described, and the water around the ships was discoloured with the oil and blood. The shore in the neighbourhood was hidden by an accumulation of meat and bones in various stages of putrefaction. Some of the flesh was a relic from previous seasons, so that, when getting ashore from a boat, one was liable to find oneself wallowing in old whale flesh instead of stepping upon solid ground.

On the morning of the 25th, the captain and I walked up to the top of the cliff at the back of the harbour and on the north side of Challenger Pass. From the summit, which is about 800 feet above sea level, there is a wonderful view. To the north-east can be seen Livingston Island and to the south and south-east Graham Land and Louis Philippe Land (Trinity Peninsula).

In the afternoon we went in the large motor boat to fish just outside the harbour, and in a very short time caught a hundred or so fair-sized fish. The method was quite simple. A weighted line to which hooks baited with whale meat were attached was lowered until it touched bottom. It was then pulled up about an arm's length and almost immediately one or two fish would bite. According to the whaling people, there are no fish in Port Foster; if this is so, it must be due, I think, to injurious chemicals in the water, a result of the volcanic nature of the island.

In order to gain some idea of the features of the island, I set out the following morning to walk to the north-east point. On the map it is about seven miles. On the way to the large penguin rookery by 'Sewing-Machine Rock', on the east side of the island, only a few patches of volcanic débris were bare, the rest being covered by snow. This rookery, the largest on the island, was inhabited by Ringed Penguins and a small colony of Macaroni Penguins (*Eudyptes chrysolophus*). The latter are slightly larger than the Ringed Penguins and of quieter and more peaceful disposition. The head and back are of a bluish black colour with a kind of sheen. Above the eyes there are bands of long yellow-gold eyebrows which join at the forehead. The beak is a reddish brown colour. In contrast to the Ringed Penguin they lay only one egg which is slightly larger than that of the Ringed Penguin and of a bluish white colour.

From the rookery I made my way northwards, but the fog, which had been present since I started, thickened and forced me to turn back when I was about halfway along the coast. The way would have been easier along the shore than on the higher ground, which was the route I had taken, but not so interesting. The ground above sea level fringing the coast is all of the same character and consists of mounds of ashes and cinders up to 100 feet in height, with snow-drifts between. There were miniature glaciers, some composed of alternate layers of ashes and ice. I frequently plunged up to my waist in the snow-drifts between the mounds usually when I least expected a deep hollow.

The fog having become very thick, I found my way back by following the footsteps I had made on the outward journey. Walking on the snow is always a thirsty job, but little pools of water had formed in the cinders and made delicious drinking water.

After lunch the next day Lester and I went for a walk over the glacier to Pendulum Cove. We first walked along the beach, and examined the crater lake *en route*. This lake, which is circular and roughly 900 feet in diameter, is extremely interesting, being a small flooded subsidiary crater. It is a tidal lake and is separated from the main sheet of water forming Port Foster by a ridge about 100–200 feet wide and 8 feet in height. The captain of the *Svend Foyn I* told us that they had sounded to 60 fathoms without reaching bottom.

Just as we were about to turn inland, we saw our first seals, a Crabeater Seal (*Lobodon carcinophagus*) and eight Weddell Seals (*Leptonychotes weddelli*), basking in the sun on the beach. They seemed very helpless, unwieldy creatures, breathing thickly as though they had bad colds. Near them were a few Gentoo Penguins (*Pygoscelis papua*) which may have been visitors from another island or may have belonged to a rookery on some other part of Deception Island. We did not see a Gentoo rookery on Deception Island, but Charcot records their nesting there in the account of his second expedition (1908–10).

The glacier which we crossed to reach Pendulum Cove arises from Mt Pond and measures about 1½ miles from north to south. It is not the usual type of glacier; at first sight it appears to be composed of heaps or mounds of ashes and cinders with many blocks of volcanic rocks

perched on them, but closer inspection shows that it actually consists of alternating and contorted beds of ice and cinders and ashes. Most of its surface is devoid of snow, but to cross it one has to pass through a good many snow-drifts. Very extensive melting was taking place and there were numerous pools in the hollows. Through the many small crevasses could be seen the ice below the covering of ash and cinder. The mounds are deceptive and it is only after an unintentional slide down one that the bare ice is exposed. The covering of volcanic débris is sometimes only an inch or two thick, but often much thicker. Many of the mounds and intermediate hollows are undermined by the action of water. In one place we heard a noise like the puffing of a railway engine, and it was not until we looked down a deep crevasse that we saw that the cause of it was a small torrent rushing underground.

Some of the blocks perched on the tops of the mounds are of large size; one I measured was 7 feet by 3 feet by 2 feet and there are thousands of smaller ones, as well as many rounded boulders, the latter presumably volcanic bombs. In one place we came to a large patch of cinders like a mound of coarse coke, but usually the cinders which form the mounds are small and most of them would pass through the mesh of a half-inch sieve.

Whilst we were walking we came across a number of nests of the Dominican Gull, which were composed of feathers and occasionally moss and contained eggs. Three eggs make a clutch.

As far as we could see, the inner west shore of Port Foster seemed to be composed of mounds of cinders and

ashes with layers of snow between. Ice still lay in Port Foster but it was breaking up and gradually drifting towards the entrance.

We arrived back at the ship about 10 p.m. after a very pleasant walk, for the sun had shone most of the time, and the only breeze was a light westerly wind. The temperature, which had not varied for some days, was 36·0° F. at 8 a.m., falling to 31·0° F. by 8 p.m.

Chapter II

WHALING FROM DECEPTION ISLAND

One of our great attractions at Deception Island was the opportunity of whaling. When, therefore, on the evening of 29 November, one of the catchers, the *Graham*, appeared with her catch, actually two Blue Whales, I went on board for her next trip. What particularly cheered me was the fact that the weather looked kind, for a catcher is not the best boat to be on in a rough sea, especially for anyone with a tendency to seasickness. She stopped in the harbour for only about half-an-hour, the time taken to hand over her catch, and by 9 p.m. we were outside in Bransfield Strait. There was hardly a ripple on the water. Within an hour the watch from the crow's-nest reported a whale in sight and we chased it until 1 a.m., when it was successfully shot. By 4 a.m. we were back again at Deception Island.

The *Graham*, which was typical of the catchers working from Deception Island, was a small ship of about 150 tons gross, with a length of 105 feet and a beam of 20 feet. Her draught at the stern was 12 feet and at the bow about 3 feet less. She had a maximum speed of about 15 knots. Her crew consisted of ten men—the captain-gunner, mate, chief and second engineers, steward, two stokers and three ordinary seamen. On some of the other catchers the offices of captain and

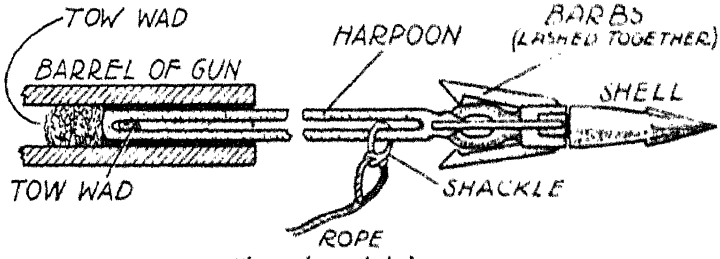
gunner were separate, but on the *Graham* they were both held by one man (Captain Sverre Skidsmo). Four-hour watches were arranged, with dog-watches from 4 p.m. to 6 p.m. and 6 p.m. to 8 p.m. During the captain's watch two seamen took the helm in turn to relieve the captain. The mate had in his watch only one seaman who took it in turn with him to keep a look-out in the crow's-nest and mind the helm.

The following description of other details of the ship is taken from my diary:

On each side of the ship are two lockers to accommodate the main-lines, which are six and a half inches in circumference and one hundred and twenty fathoms long. Each locker holds four of these, spliced together. To the end of the first main-line in each locker is spliced a fore-line, four and a quarter to four and a half inches in circumference and forty fathoms long. The lines naturally take up a considerable amount of room on board. During a season the three catchers will use about thirty or more main-lines between them and about fifty fore-lines each.

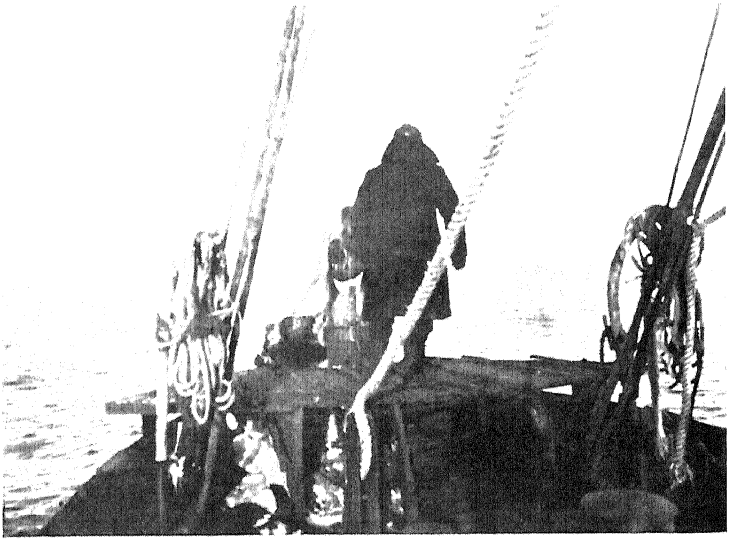
From the locker, the main-line passes through a bottle-like neck, next through the grooves of the winch drums, and then through a pulley-block suspended from the mast. The pulley-block takes most of the strain when a whale is harpooned, as it is suspended from a wire cable which runs down the side of the mast to below deck, where it is attached to a pair of enormous springs. The line then passes through another block in front of the firing platform, where it joins the fore-line. The latter is coiled up in front of the gun on a slightly inclined, moveable, round plate and is lightly lashed to the plate by a few strands of hemp. The gun itself is mounted right forward on a small platform on which the gunner stands. It is loaded from the muzzle, a wad of tow being

inserted first, then a bag of gunpowder, and finally the harpoon weighing about a hundredweight with a shell, exploded by a detonator, screwed on the end. The harpoon has four barbs at the end which are lightly tied down. The latter open out after the harpoon has entered the whale and strain is brought to bear, and prevent it from slipping out again. Down the middle of the harpoon shaft is a slit along which runs a shackle connecting the harpoon to the fore-line.



The modern whale harpoon

At 6 a.m. on the 30th, when we were out in Bransfield Strait, we were awakened by the mate with news of a whale in sight. The captain had allowed me to sleep on the settee in his cabin, and as neither of us had removed our clothes, we were on deck in a few moments. We could see a fine Blue Whale a short distance off. We chased it until 8 o'clock, when, after manœuvring the ship into a favourable position, the captain was at last able to shoot. There was an explosion which shook the ship. As the harpoon left the gun, the shackle to which the fore-line was attached ran down the slit in the harpoon, its impact with the end eased by a wad of tow. Out flew the fore-line, then the main. Meanwhile every-one hurried to his appointed duty under the directions



4. *Ready to fire*

5. *There was an explosion which shook the ship*

of the captain, who lent a hand where necessary. The first or second engineer minded the winch and stopped the line from playing out too fast. The cook left his galley and helped at the winch, tightening or slackening the brake, and sprinkling ashes or sawdust on the line to prevent slipping. The mate and a sailor reloaded the gun, this time attaching the line from the second locker. Another sailor brought forward the inflating apparatus; a third went below to see that all was well in the rope lockers; a fourth was on the bridge. Even the watch left his post in the crow's-nest to lend a hand on deck.

The line was gradually played out until the whale stopped and sank. The winch then gradually hauled in the main-line, and finally the fore-line, which required more care. The engineer carefully watched the block suspended from the mast over which the line passed and directly he saw by the lowering of the block that the strain was becoming too great he stopped the winch. As the strain lessened, he started up again and continued hauling in. As the thinner fore-line was more apt to slip than the main-line, the steward stood by ready to throw sawdust or ashes over it and into the grooves of the winch drums. The sailor in the locker below coiled the rope as it came down from the winch.

The whale was now lying off the bows of the ship, the water around stained with its blood. The inflating tool, a long, hollow, perforated tube, with its end sharpened and flattened out, attached to a fir pole, was thrust into the whale's belly, and sufficient air pumped through to keep the animal afloat until its own decomposing gases did it themselves. This operation only took a minute or

two and the hole formed was then plugged with a wad of cotton waste.

Meanwhile two thin lines, attached to one another and each weighted at the end, were dropped round the tail. Rope was next attached to one end and pulled round the body; then lastly to this was attached the chain cable which was in turn passed round the body and used to secure it to the ship. The forward capstan was now used to haul the whale to the side of the ship so that its tail was sticking up above the bows and its head was astern. The ends of the tail were cut off with a flensing knife, for in rough weather they might do considerable damage to the ship, in spite of its steel sides. As it was, our ship's sides were already bent about along by the rails. A notch was also cut in the tail so that the parent ship might know by the number of notches how many harpoons were in the whale. Thus one notch denoted a single harpoon and two notches two harpoons. The fore-line was severed from the harpoon by a chopper something like a large suet chopper at the end of a long pole, the harpoon itself being left in the whale's body to be extracted at the factory and put into good order again by the smith. The massive harpoons were often twisted into weird shapes by their contact with the whales.

The whale we had caught measured about 82 feet in length. It was a fine specimen and as it would produce a good quantity of oil, the crew who, like the workers on board the factory, were paid by the bonus system, were well pleased with themselves and their captain, who had the reputation of being a very fine shot. The whalers reckon that, on an average, a foot of whale weighs a ton,

which makes the whale by far the biggest prey of any form of hunting.

We were back at Deception Island with our catch by 1.30 p.m. and within five minutes had dumped the whale and were off again to the Straits. The watch from the crow's-nest scoured the sea once more for a whale 'blow', but as no whales could be sighted we proceeded a fair way into the Straits. We saw the Kendall Rocks in the early afternoon and at half-past six were in roughly Lat. 63° N., and Long. 59° W. The sun shone and the sea was very calm, making the trip exceedingly enjoyable. At 8 p.m. another whale was reported from the crow's-nest, so we altered our course to south-west, leaving Astrolabe Island well away to port. We found, however, that our whale was only a young or 'milk' whale as the whalers call them, so we gave up the chase and started off E.N.E. again. The captain and I turned in about 10 o'clock. His cabin was comfortably situated amidships and was, if anything, almost too well heated.

Half-an-hour after midnight I was awakened by the sound of the gun, but as I was rather tired I did not feel inclined to get out of my warm bed on the settee until the captain came in and told me that they were having to draw the ship to the whale. The first harpoon had struck home but the animal was not dead and a second shot would be necessary. In the meantime we were being towed about by the whale, for there is no way of stopping such a massive creature while it is still alive. I got on deck at 1 a.m. It was quite light outside; in fact there is no real darkness here at this time of the year, only a peculiar dimmed light for the few hours of the night-time.

Some of the cloudy days are almost darker than the night itself.

This whale was another Blue Whale and a tough customer. Four lines each 120 fathoms had been played out to him, but despite the harpoon and the shell and loss of blood he still had plenty of vitality left. Gradually we got nearer to him, and as the winch slowly hauled in the main-line, the ship relieved the considerable strain by going ahead a little. By 1.30 a.m. he was off the bows and the captain waited for a suitable chance to launch the second harpoon. The ideal spot to hit the whale is in the middle of the body beneath the dorsal fin. Off went the gun again, a tongue of fire leaping from the muzzle; out flew the line. The whale, whose blows just before the shot had changed from fifty-second intervals to twenty seconds, disappeared for three minutes on end, then came up for three blows at ten-second intervals, disappeared again for two minutes, and, after his head had made three feeble appearances to take in breath at five-second intervals, died. It was pathetic to see the noble creature perish, the loser of a battle between brains and brawn, and to hear the laboured breathing which told of his dying struggles. A quarter of an hour later he was alongside the ship, head to bows, and after all the usual operations was towed tail first back to Deception Island which we reached by 2 o'clock. The weather at this hour was quite pleasant and not even particularly cold. The sea was calm.

My night's sleep having been disturbed I turned in again and when I looked out at 6.30 a.m. we were just leaving the harbour. The weather had changed, and

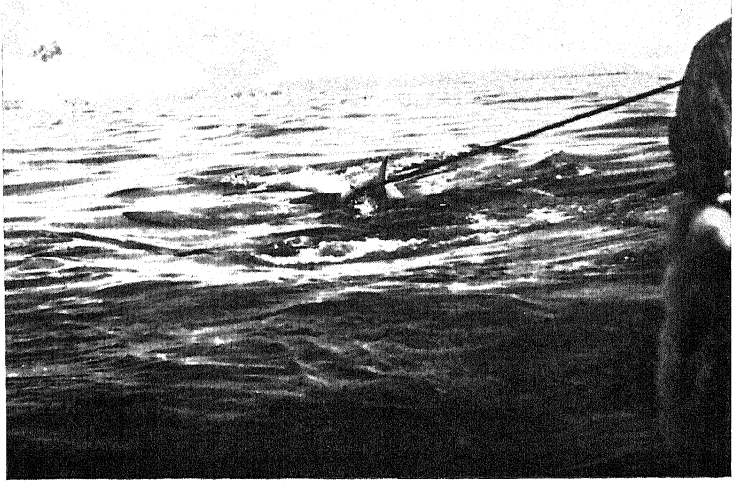
outside we found a very different state of affairs than when we had arrived in the small hours of the morning to deliver our catch. The sea was rough, a powerful wind was blowing, and the ship was soon rolling and tossing about in a manner which was bound to be disastrous to any land-lubber's comfort. By 4 p.m., after cruising about unsuccessfully, we drifted to the lee side of Deception Island and, an hour later, dropped anchor. Some snow had fallen during the day. We saw many small icebergs during the morning all much battered about, and quantities of ice broken from these bergs floating around.

During the whole of the next day (2 December) we waited patiently for the weather to improve. A heavy wind was blowing all the time and we knew it must be really rough out in the Straits. Snow and slush lay on the decks, making them very slippery. There was nothing to see or do. The captain dozed in his bunk most of the time, every now and then showing signs of life by reaching out his hand for a cigarette. I lay on the settee smoking and reading and sleeping, cursing myself for not having brought more than one book to read or a pack of cards. Fortunately my book bore re-reading three times in two days; it was Stevenson's *Travels with a Donkey in the Cevennes*, and I learned a good many passages off by heart.

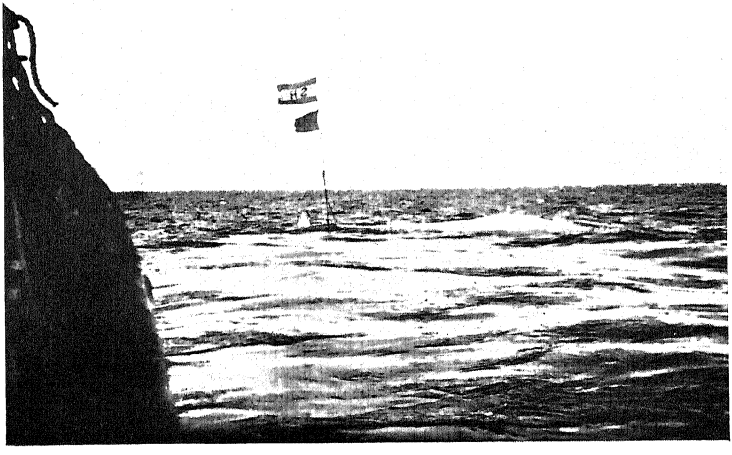
At 4.30 a.m. on the 3rd we were out in the Straits once again, and by 8 o'clock had harpooned another whale, a female Fin Whale (*Balaenoptera physalus*), which was accompanied by a youngster about 20 feet in length, both belonging to a 'school' of whales. As we were

anxious to keep up with the school she was inflated as quickly as possible, and was left floating with a pole bearing a red flag with the letters 'S.F.' (Svend Foyn) stuck into her to denote ownership. We were soon under way again on the track of three other Fin Whales. We went for the male, launching two harpoons before he was finished off. By midday we had left him with our first catch and were off once more after the school, which had originally consisted of eight or ten whales. By 2 p.m. we had caught and deposited another. We had a little more trouble with this one which was not killed outright by the harpoon and shell, but first reared up in the water in its death agonies, then disappeared below and after showing itself once or twice more, lashed the water for a few seconds before it died. If the unfortunate creature is shot in the lungs, blood spurts from its blow-hole as it exhales.

We soon dumped this one with the rest, and at 3 p.m. were once more among the school. Half-an-hour later another was added to our bag, but this gave us more trouble than any of the others had done. Even after two harpoons had entered its body it still lived, so that another device had to be employed, both lockers of rope being in use. The ship was hauled close to the wounded whale until we were but a few feet from its blow-hole. A needle-like instrument, consisting of an iron tube, one end socketted and fixed on to a long fir shaft, the other flattened out into a heart shape with the sides and point sharpened, was thrust into the vitals of the whale two or three times in succession. When the stabbed parts were under water one could see the air rushing out from the



6. *One harpoon home, but still not dead*



7. *A flagged whale*

inside of the monster. By about 4 o'clock he was played out, although he had offered a game fight, and died after lashing the water feebly. Afterwards he lay on his side with his head beneath water. This particular method of killing the whale when the harpoons have failed is not without its dangers, for a whale in its death agonies may rear up in the water and falling on the side of the ship, do considerable damage.

We secured our fourth capture alongside and made our way back to the other three which we soon had in tow, two on each side of the ship, reaching Deception Island at midnight.

Although the catching of the four whales had given me a wonderful idea of whaling methods, from a monetary point of view they were only about the equivalent of one good-sized Blue Whale, which would produce as much oil as our four Fin Whales put together.

After seeing the catching of the whales and their delivery to the factory, I was better able to appreciate the remainder of the operations which were necessary to obtain the whale oil. I quote again from my diary:

First the whales, in turn, are brought by the large motor boat from where they lie off the bows of the floating factory, to the starboard side of the ship. Those which have been caught the longest are dealt with first and any that have been lying for some time have swollen to a terrific size and look as if a mere pin-prick would cause an explosion. Two flensers, working partly from a flat-bottomed boat and partly on the carcase itself, strip off the blubber or covering of fat from the whale with their long sharp knives. By means of a large wooden toggle passed through a slit in the blubber and attached to a wire rope from a winch on deck, great blankets

of blubber are hauled on board the factory. Here they are laid out on the deck and cut up into long strips by a flensing knife; then again by cross-cuts into smaller pieces. These are passed through a chopping machine and from thence to the blubber boilers, of which there are ten. Steam is passed into the boilers and the oil tried out and stored either in tanks or in barrels.

After it has been divested of its coat of blubber, the whale is towed to the port side of the factory, where great joints are cut from the carcase. The flensers wallow up to their waists in the body whilst they hack away with their sharp knives. It made me feel violently sick to see the casual way they cut off and chewed quids of tobacco regardless of the blood and mess on their hands. The joints are hauled up on to the large deck amidships to be reduced to smaller pieces; then they are thrown into the large meat boilers of which there are seven on each side of the ship. Here, by means of steam at high pressure, the oil is tried out; and then removed by pipes to storage tanks. This oil is not, of course, of such good quality as that extracted from the blubber. The bones and dry meat left in the boilers are dragged out through doors at the bottom and add their quota to the existing accumulation of filth in the sea. When the steam is let out of the boilers at the end of a cooking woe betide any poor unfortunate who happens to be on the rope-ladder behind the waste pipe as it escapes for he is soon enveloped in a foul cloud of the most pestilential odour imaginable.

A 'full cook', that is to say when both lots of boilers, fore and aft, were full, represented about four hundred barrels of oil. The *Svend Foyn I* was built to take about 25,000 barrels of oil, stored partly in barrels and partly in tanks.

At the first opportunity Lester and I had a long talk

with the captain about his whaling experiences; his statements about the movements of whales were interesting. He told us that large Blue Whales come up from the Weddell Sea through Antarctic Sound, proceeding south-west and keeping north of the Palmer Archipelago. They are very rarely known to enter the Belgica Strait from the south. They also come from the open sea to the south and west of the Palmer Archipelago. There are plenty of small Blue Whales, he informed us, around Brabant Island. The Fin Whales apparently proceed in a northerly direction up the De Gerlache Strait. Humpback Whales (*Megaptera nodosa*) may occur anywhere. Southern Right Whales (*Balaena australis*), when caught (which is very rarely), are usually around the Austin Rocks.

Chapter III

CHRISTMAS TIME

The next few days passed uneventfully and were chiefly conspicuous for bad weather. It was not so much that the temperature was low—it fell only to 28° F.—but the terrific wind from the north-east, the snow-drift blowing on to the ship from the shore and the falling snow made life very unpleasant for the poor fellows on deck. They worked hard for their money. I doubt very much whether my own countrymen would work under such conditions—discomfort, long hours, no public houses, no football matches—yet with it all they never grumbled.

On 8 December we had a wireless message from the *Gouvernor*, which was in Admiralty Bay, reporting ice 30 miles north and east of Joinville Island.

One evening, despite the drifting snow, we managed to get ashore to pay a visit to Hamilton and the doctor on the *Ronald*. We left them about 1 a.m., and after negotiating first the slippery rope-ladder down the side of their ship, then the floating bridge between the ship and the shore, and finally various snow-drifts, found our pram left high and dry by the low tide. We tried hard but nothing would move her, and as the snow-drift had nearly covered us we were forced to return to the *Ronald* to spend the night on Hamilton's settee, lying one at each end, with our feet resting on each other's

shoulders. Hamilton slept through all the noise we made, and until we told him later on was unaware that we had spent the night in his cabin.

We had watched the sun rise at 2 o'clock before we returned to the *Ronald*; it was a magnificent sight with gorgeous yellow and orange reflections on the tops of the marble-white mountains. It heralded a day (14 December) of better weather, so in the afternoon I went with the chief engineer in the motor boat, with a water-boat in tow, to the glacier for water. I little realized then how familiar we should be with a water-boat later on. We ran a hose from a stream caused by the melting of the glacier and, whilst waiting for the water-boat to fill, I found some nests of the Dominican Gull, some with eggs in them and one or two with young gulls which must have been hatched two or three days before. One nest contained an egg through which the young bird was pecking its way.

Lester had been anxious to make tidal observations, and on the next fairly fine day, 16 December, he came over to the *Svend Foyn I* to ask me to give him a hand with a tide-pole which he had just constructed. Little suspecting any great difficulty, I agreed to help him, but to begin with the pole was 16 feet long, a cumbersome length which he would not reduce because it had been borrowed. After some trouble we got it down the side of the ship into the pram, Lester constantly warning me not to put my dirty hands on the painted numbers and ending by smudging them with his own. We made for the shore, and I had to manœuvre the pram about, stern first, until he decided on a suitable spot, but every time

he tried to force the pole in, it acted like a powerful thrust with a punt pole and the boat moved away, however hard I rowed. We tried several times with no better success until we found a submerged whale skull with a convenient hole in the top through which Lester, standing on the end of the boat, pushed the pole, whilst I stood on the greasy skull in my sea-boots and held the boat from slipping away. The pram behaved badly whilst we were guying up to the wire hawser from the ship, sliding beneath the wire and throwing us both into a heap at the bottom. Our audience, Hamilton, the doctor, and the captain of the *Ronald*, seemed to find some entertainment in our performance, and shouted encouragement from time to time.

During a walk along the shore towards the glacier with Hamilton the same evening I saw a Weddell Seal. We had actually gone to look for Antarctic Terns' nests (*Sterna vittata*), but although we found hundreds of empty ones, we could find only one clutch and a few single eggs.

The tide-pole fell over the following morning, so we had another performance righting it. Lester tried a wonderful jump to the shore from the boat, but ended up by slipping and sitting down on a whalebone liberally covered with grease.

We never solved the mystery of a curious agitation in the water near the shore, which occurred about 5 p.m. on both 16 and 17 December. Whatever caused it, it made as much disturbance as a nearby whaling-catcher might have done. Could it have been caused by the volcanic nature of Deception Island?

On 20 December one of the *Thor I's* catchers brought in a Humpback Whale, and by dint of much hacking with a knife we secured some of the barnacles which were adhering to its mouth. There were some small parasites on the barnacles themselves. Humpback Whales are curiously prone to the attentions of barnacles, which make the poor things look as though they are suffering from chronic herpes.

By the time Cope and Wilkins had arrived in the *Solstreif* we had transferred our stores from the *Bombay* and Lester's ship, the *Ørn II*, to the *Thor I*, as the former were due to leave for another harbour. The *Solstreif* was obliged to lie outside Deception Island during the greater part of the 23rd, owing to the terrific wind from the north-east which prevented her entering the harbour. A life-boat lying on a pile of barrels on shore was blown about 20 yards away, and a pram belonging to the *Thor I* was cut in half and left with only its bows hanging from the stern of the ship. The temperature of the air remained about 28° F.

There was good weather on the 24th, and the *Solstreif* was able to get into harbour. We were pleased to see Cope and Wilkins, who had brought with them eight dogs from the Falklands.

Supper on the *Svend Foyn I* that evening (Christmas Eve) was a really wonderful meal, for the cook had made a great effort to tickle our palates, in spite of the limited means at his disposal. The meal was in two instalments. First we had meat and pudding washed down with a little brandy, then, after an interval, tinned fruit, excellent sponge cake garnished with tinned cream, nuts and

figs, and hot whisky or sherry. By the end of the second half of the supper most of the officers were in a sentimental mood and began to sing lugubriously. We thought in our ignorance that their rather mournful ditties were intended to be humorous, until we found out later on that they were a species of carol. We left the party about 10 o'clock and rowed over to the *Ronald*, meeting Cope and Wilkins on the way. Here we all joined in another party—more eating and more drinking, with many 'Skåls' (the Scandinavian equivalent of our 'good health'). This 'Skål' business is a trifle exasperating—you want a drink, but the moment you pick up your glass you are involved in a series of ceremonious 'Skåls' all round. We left the *Ronald* and rowed over to the *Solstreif*—more eating, more drinking, more 'Skåls'. About midnight, Lester and I, at alcoholic peace with the world, left to return to our ship; then our troubles began. A lot of ice had drifted into the harbour where the ships lay, and it took us an hour and a half to negotiate the short distance between the two ships. We had to pull the pram over half-a-dozen ice floes and were quite sobered and worn out by the time we got back to the *Svend Foyn I.*

On Christmas Day the harbour was full of ice, but what a wonderful Christmas morning, warm and sunny, with the temperature up to 41° F. The ice was so closely packed that it was possible to walk from one ship to another without difficulty. The snow-clad mountains made a picturesque setting. No festivities took place, but we celebrated the holiday by shaving and wearing collars and ties.

Before lunch, Cope, Hamilton and I walked to 'The Gap', the break in the top of the cliff at the back of the harbour, and found a nest with an egg of the Wilson's Petrel. This dainty little bird, a cannibal, alas, builds its nest in holes in the rocks and lays a white egg, very big in comparison with itself.

Boxing Day was another fine day with a light westerly wind and a temperature again up to 41° F. A party of us walked over to the large penguin rookery. Some of the eggs had just hatched. On the beach at the foot of the rookery we saw an Elephant Seal (*Mirounga leoninus*) and several Weddell Seals. I found a solitary Adélie Penguin (*Pygoscelis adeliæ*) which Hamilton shot for his collection.

With the arrival of Cope and Wilkins our thoughts centred upon the journey south and the serious part of our work. Dogs had to be seen to, scientific instruments examined and stores checked. We did get one more trip out, however. On this occasion we took one of the motor boats along the coast round the west side of Challenger Pass almost as far as the rookery from which we had collected penguin eggs some time before. The coast to the west of the entrance is built largely of volcanic lapilli of red colour. We saw some Wattled Sheathbills (*Chionis alba*) perched on the rocks, but no nests. On the heights above the Pass were two small rookeries of Ringed Penguins and half-a-dozen Macaroni Penguins, and on the cliffs Cape Pigeons' nests with eggs. The latter lay only a single egg.

At 7 p.m. on 31 December we had our usual supper and, after half-an-hour's interval, started again on nuts,

figs, New Year's cake and wine to celebrate New Year's Eve. Our orchestra was a gramophone, and popular numbers were liberally encored. We rowed over to the *Ronald* later on to join the others. At midnight the silence of the island was broken by the sound of the ships' whistles, the clanging of the catchers' bells, and the discharge of a rocket. Everybody was on deck. Our handshakes and New Year greetings were conventional enough, but we 'saw in' the New Year in far from conventional surroundings. Snow had been falling practically all day, and the decks lay under a white mantle which glowed in the strange light. There is something uncanny in greeting the newborn year when all around is as light as day. I slept on board the *Thor I* and had a really comfortable night's sleep in a cabin warmed with steam pipes. Mine on the *Svend Foyn I* had no such luxury.

1 January 1921 was greeted by a display of wind from the north-west, and, as a variation, some rain. On the 3rd there was some improvement, and the *Ørn II* and *Bombay* left for Belgica Strait to begin whaling operations farther south.

At last the time for our own departure arrived, and on 11 January we bade good-bye to Deception Island. Before lunch we helped to fill the fifty sacks of coal which we were to take south with us. Later we loaded the *Selvik* with stores from the *Svend Foyn I.* The *Chloe*, one of the *Ørn II's* catchers, and the *Odd I* from the *Thor I*, went alongside the *Thor I* and were loaded up as well. We then distributed ourselves on board the three ships, Cope and Wilkins on the *Odd I*, Lester on the

8. *A whale's rib bone*

9. *Cutting up whale meat*

Chloe, and myself on the *Selvik*. Hamilton, one of the doctors, and three of the factory captains accompanied us. We left Deception Island in fine weather about 10.30 p.m., the fog-horns of the *Ronald* and *Solstreif* giving us a send-off which impressed me more than I can describe. As I stood looking at the island in its cold beauty, I could not help wondering whether it might not be my last sight of the *Svend Foyn I*—my last link with home. Cope had had experience of the Antarctic and Wilkins had been in the Arctic, but it was with a sense of foreboding that I (and I daresay I can speak for Lester, too) watched the familiar scene gradually disappear and thought of the strange, unknown country for which we were bound.

Chapter IV

WE ARRIVE AT WATER-BOAT POINT

I spent a fairly comfortable night on the settee in the saloon. When I got up we were well in De Gerlache Strait with a lot of loose ice lying around us, the sea calm, and the weather quite pleasant. We arrived at Andvord Bay at noon and started to land our belongings on a small island close to a glacier and a little south of the entrance to Andvord Bay, in Lat. 64°48′ S., Long. 62°43′ W. The whaling people thought we should have little difficulty in crossing the mainland from here to the Weddell Sea and so cutting off the long journey from Snow Hill Island included in our original plan. The mountainous land by the side of us did not look very hopeful at first sight, and, though I feared that the whalers were over-optimistic, we were then hardly in a position to decide for ourselves what could or could not be done.

All hands from the three catchers helped with the unloading of our stores and equipment. Whilst one party from each ship loaded the stores into life-boats or prams and rowed ashore with them, a second party on shore was ready to unload and carry the cases and so on. All did their work well, if we except the party which dumped most of its share of stores below high-water line so that later on many of the cases got wet before we had the

time to carry them out of the way of the incoming tide. The *Selvik* and *Odd I* had finished by 8 p.m., and made their departure. The *Chloe* did not leave till midnight, for, in addition to her share of the ordinary stores, she had some fifty sacks of coal to unload. The greatest praise is due to the crew of this ship. The wireless operator from the parent ship was in charge and worked like a Trojan, and with much hard work they carefully and safely brought our coal ashore, placing it well above tide level. It was no easy matter working in sea-boots and walking on slippery rocks. After the *Chloe* had gone we had a lot of work to do to get the cases into some semblance of order and safety before we could retire to rest. We were surrounded by a jumble of cases and oddments.

When we had the opportunity of surveying our surroundings we saw that we were actually on an island at the foot of a glacier on the Danco Coast. We were able to get our bearings without much difficulty. About two miles to the west of us lay Lemaire Island, to the south-west Bryde Island and to the north the entrance to Andvord Bay. Farther north lay the island which is variously called De Rongé Island, Rouge Island or Cuverville Island, and in the far distance we could just see Brabant Island. To the immediate east was the glacier leading up to one of the mountain peaks of Danco Land.

The mountainous islands and also the mainland were covered with snow and glaciers, the shores being fringed with glacier faces except where, here and there, a rocky promontory was inhabited by a penguin rookery, or, higher up the mountain slope, a rock patch was too steep

for the snow to settle on it. These rock patches are useful in recognizing the islands, since some of the patches assume peculiar shapes which probably vary very little from year to year. All the islands just mentioned, as well as the mainland, were very rugged, though Brabant Island had a more rounded outline.

We called our island Water-Boat Point, as we found on it an old water-boat which had been left stranded by the whaling factory *Neko* about eight years before. It was really one of a group of three rocks around a small bay (Life-Boat Bay) and scarcely deserved the designation of island. The other two rocks we called Coal Point Island and South Island (see Map). Water-Boat Point,[1] which was the largest, was quite small, about 700 feet long and 350 feet wide, with its highest point 18½ feet above sea level. It was almost entirely occupied by a large rookery of Gentoo Penguins. At high tide it was separated from the little island to the south, which we called South Island, by a small channel about 25 feet wide, but at low tide it was possible to walk from one island to the other. South Island was smaller than Water-Boat Point, had steep sides and was about 370 feet long, 200 feet wide, and 21 feet above sea level at its highest point. This island, too, was occupied by a rookery of Gentoo Penguins, and had, in addition, a colony of Ringed Penguins on the higher slopes.[2] Loose rocks lay between South Island and the Glacier 150 feet away, the sea rising over them at high tide. This glacier,

[1] Usually called by us 'the Island'.

[2] We calculated later on that there were upwards of 12,000 Gentoos and 1150 Ringed on the various rookeries.

as I have already mentioned, arose from the mainland of Danco Land and had a rounded surface. Where a section terminated by the side of Life-Boat Bay, it sloped down to the water, but that part which faced Glacier Bay had a perpendicular face with an average height of 110 feet.

By walking along the glacier slope it was possible to reach Coal Point Island[1] which was comparable in size with Water-Boat Point but more uneven. It jutted out from the glacier foot and might even have been connected with the mainland. It was 850 feet long by about 225 feet wide and 20 feet high at its highest point. It was crossed by two gulleys close to the point. A lake lay between the Island, the Glacier and a little detached portion of the Island. Coal Point, which was the abbreviated name we used, was also occupied by a Gentoo Penguin rookery with a smaller Ringed Penguin rookery on the higher ground. It was curious how the Ringed had a preference for the higher ground on the rookeries.

Life-Boat Bay was not big enough to be of any use as anchorage for a ship, not even one the size of a catcher, but it was a useful place to anchor the life-boat and the sledge-boat. I believe that the *Neko* once used Glacier Bay as an anchorage for a short time. This was the time when the water-boat was left ashore.

We had properly disturbed the peace of the Gentoo Penguins on whose rookery we had landed. They probably wondered what kind of fellow-penguins had arrived and why they made such large nests. The Gentoos had just hatched their eggs and the young were

[1] So named because one of the catchers unloaded some coal there by mistake.

still very small. Unfortunately we were obliged to remove many of the young to make room for our stores, but we tried to persuade birds in other parts of the rookery to adopt them. The birds with no young of their own were delighted; the others, however, resented the intruders and pecked at them and tried to kill them. I am afraid that the wretched Brown Skuas had some free meals, for they were hovering about on the look-out for young birds and eggs all the time.

Our real blessing was the old water-boat which we immediately decided should be our home. Without it we should have been obliged to live in tents, or, at the best in a hut made of packing-cases, throughout the winter. It was a flat-bottomed boat, 27½ feet long, 10½ feet wide at its greatest breadth and with an outside height of 3 feet 9 inches, entirely covered in by a deck, a hatchway giving access to the interior. It had been left lying across a neck of rock about 6 feet from the high-tide level fore and aft. It was too heavy for us to lift, and we were forced to put up with the minor trouble of its tilt at an angle of 8°. We chose the aft portion for our sleeping-quarters and fixed it up fairly comfortably. We filled the parts between the cross-timbers at the bottom of the boat with sennegrass,[1] covered the latter with sacking, and then with reindeer skins, and laid our reindeer-skin sleeping-bags on the top of all. The body portion of the bags was slightly over 5 feet long, and the width at the shoulders 2 feet 6 inches, decreasing to 1 foot 9 inches at the feet. There was a head-flap about 1 foot 8 inches long. The bags were made with the fur inside,

[1] A kind of Norwegian hay used as packing in *finnesko*.

and were very comfortable after one had become accustomed to the tickling of the fur.

Soon after the first two whalers had gone Wilkins killed a Weddell Seal and we had for supper our first meal of seal-flesh—liver and steak, fried with onions. As we were very hungry, it seemed a dish worthy of any banquet.

After a good night's rest, we got up at half-past nine and breakfasted off pemmican, tea and biscuits. Pemmican, which figured largely in our menus from this time, is a tinned soup, very hard and compact, and is made, according to the manufacturers' description, from 'albumen and fibrine of beef, animal fat and extractives of meat'. Ours was sealed in oval tins with an opener at the top like sardine tins, but was difficult to extract unless one first slit the sides of the tins with a tin opener. Pemmican is an excellent food and quite agreeable to the taste. To prepare it, it is broken up into small lumps, water is added and the whole is brought to the boil. Consistency is a matter of taste; it may be made quite thin or thick enough to hold a spoon upright. The addition of broken ship's-biscuit is an improvement.

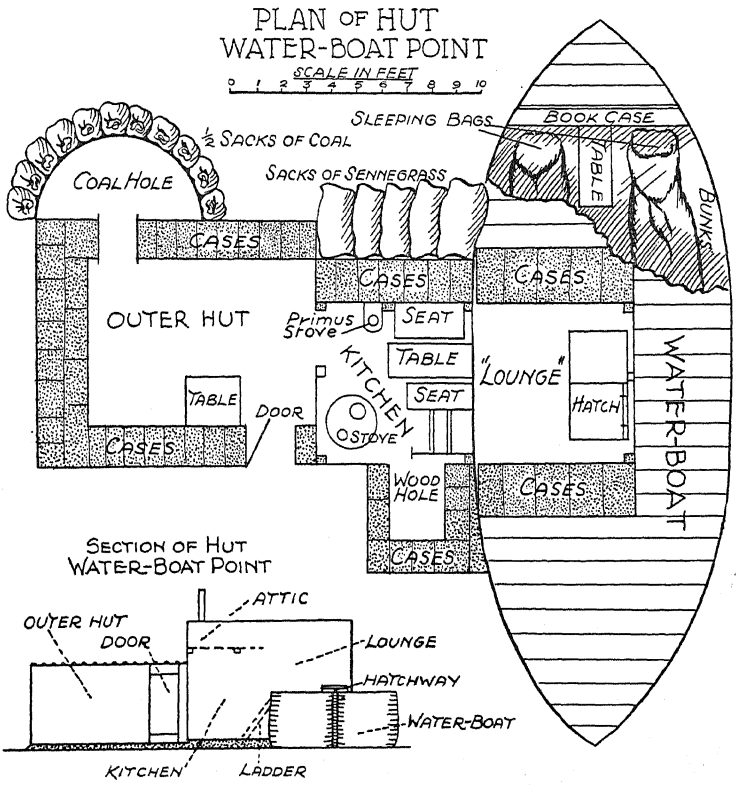
We spent the whole of this, our first day on the Island, straightening up; Cope got the inside of the water-boat into some sort of order, Wilkins and Lester rigged up a tent to use as a store and emergency shelter, and I collected gear for the hut and sorted out the multitude of packing-cases.

In the evening Wilkins and Lester killed a seal, so for supper we were able to have boiled seal with soup and ship's-biscuits, followed by a cup of tea and sledging-

biscuits or 'Polar Joes' as we called them. We were pretty cramped in the water-boat; after lowering ourselves down through the hatchway, we had to crawl to the fore part which we used as our living room and as the head-room was only 3 feet 2 inches we had to sit around on the floor. Candles gave us our only light, except for the little daylight which filtered through the joints of the boat. Cooking was done on a primus stove; the meat was boiled in an aluminium pot, and we fed from aluminium mugs or enamel plates. Our tea we drank from ordinary enamel mugs.

We awoke on the following day, 14 January, to find it fine, warm and sunny. We all felt energetic and wonderfully fit and started building our hut, on and adjoining the water-boat (see sketch). The whalers had given us some long pieces of deck wood and a few large nails. With these we set up a framework which was designed to cover the centre part of the water-boat, with the roof about 7 feet above it, as well as projecting about 8 feet beyond one side. The part over the water-boat served as a store and also protected the hatchway. Two of the walls were made of provision cases with the contents left in, and the third was made of packing-case boards. We called this part the 'Lounge'. The part which projected from the side of the boat was built as a kitchen. Its walls were formed of provision cases and packing-case wood. We built a loft above it. In one corner of the kitchen we placed a cooking-stove made from an iron oil drum with a square piece cut in the side to form a door, and a circular hole in the top for a chimney which was made of sheet-iron and projected through the roof.

The roof was made from packing-case wood, covered with sennegrass and tent-cloth. Windows were a problem, as we had no glass. We got over the difficulty by



covering a small hole left between the 'Lounge' and kitchen with canvas food bags sewn together. They let through the light fairly well and served their purpose during the good weather, though they were not strong enough to withstand bad weather.

Sacking was nailed round the sides of the water-boat to keep out some of the draught from the cracks, and we fastened spare eiderdowns round the inside walls of the 'Lounge' to make it more comfortable, though it resembled my idea of the appearance of a padded cell in a lunatic asylum.

As we had a lot of other work to see to, we did not spend unnecessary time on the construction of the hut, reckoning to add any refinements later on. It was completed by 17 January. The building was not accomplished without difficulties. It was not long before we discovered that my geological hammers were dangerous tools to use for knocking in nails. Both Lester and I hammered and cut most of our fingers with their sharp edges.

We had only one fear for our dwelling. The water-boat lay on a slope and might, with the additional weight we had put on it, have had a tendency to slip into the sea, which was uncomfortably close. We therefore placed boulders round the end of the boat to prevent this possibility. If it had slipped, it would not only have soaked many of our possessions, but the cases, which we had placed on the deck to form walls, would have collapsed. A second but lesser fear was that the weight of the cases on the deck might cause the latter to cave in. This fear was responsible for a good deal of amusement as we sat below, each wondering which case would fall on his own head.

In addition to the hut, we had the tent which Wilkins and Lester had rigged up nearer the middle of the island. We removed a lot of gear to this emergency tent and used it as a store, nicknaming it the 'Antarctic Fur Store'.

So far we had been very fortunate with the weather, which favoured us all the while we were straightening up. We had an extra long rest in bed on the Sunday and woke to find a glorious day, so pleasant that one could sit in the open and feel comfortably warm.

We killed and flensed another seal on the 16th and another on the 17th. Cope was our cook for the time being and a very good job he made of it. The way he cooked seal-liver and kidney reflected great credit on him. Seal-flesh is black in colour and if the fat is removed and the meat is fresh, there is no fishy taste at all. On some nights we had fried liver and little cubes of blubber eaten straight out of the frying-pan. How delicious those little cubes of blubber were with their agreeable nutty flavour, especially when they were eaten still spluttering with fat! Suppers varied somewhat, but breakfast was always the same and consisted of hot pemmican, followed by jam and biscuits.

On 17 January we began a regular routine of work and meals. We got up at 7.30 a.m., had breakfast at 8 a.m., lunch at 1 p.m., tea at 5 p.m. and supper at 10 p.m.

We fitted up the meteorological screen and instruments on a hillock about 50 yards to the north of the hut. Observations were started and were to be continued every four hours throughout the day and night. I was responsible for the readings during the day-time, and we arranged to take them in turns at night.

Just before breakfast on the 18th we found a bull Weddell Seal which took a good deal of killing. Wilkins first shot him in the head, then his throat was cut, then he was stunned by blows from the axe, but still he lived.

His eyes protruded and blood poured from the wound in his throat, but it seemed as if he would not die. To some extent his movements might be accounted for by the nervous reaction, but it was not until his head was completely severed, that he was quiet. I think that the cleanest way to kill a seal is to deal it a hard blow on the nose with the blunt side of an axe and then to cut its throat. It is by no means a pleasant task to kill seals. They look so harmless, and their soft, appealing eyes are so reproachful. Back in England we should never have dreamed of such repulsive actions, but here we were callous about it. I suppose that the necessity for food brings out the savage instincts of 'man the hunter'. At home we politely allow the cloak of civilization to blind us to the slaughter necessary to produce our daintily cooked meals.

The evening's supper of stew was cooked on the coal stove instead of on the primus. Pieces of blubber were thrown on the fire to help it to burn, but it required a good deal of attention all the same.

The morning and afternoon were so misty that we could see only a little way around. A very slight breeze blew from the south.

In the evening of the following day (19 January) we all went in the life-boat to search for a starting-off point for our proposed journey across the mainland. We started under sail and all went well until we were three-quarters of the way to our goal, except that we heeled over dangerously now and again owing to the lack of ballast. We were forced to row the remainder of the way. We returned at a good speed and then had to row hard

against tide and wind to get into harbour. We found no suitable starting-place on this journey.

On landing we saw a seal, our seventh, which we killed and took back to the hut. There was very little left by the time we had finished with a seal, nothing more than intestines, stomach and spleen, and the skuas, gulls, and other scavengers soon came down and made short work of these.

The next two days were extraordinarily fine; they gave me a very different impression of the Antarctic from my anticipations. I spent most of the time collecting specimens of the geological formations and studying the marine life and was thankful for the warm weather. At one time the temperature rose to 49·8° F. and I could paddle about in the shallows in my waders, although it was quite cold enough in the icy water, especially as I was obliged to plunge an arm in now and then to pick up something of interest. There were a number of echinoderms, all of one species, and the usual swarms of Euphausids, the food of the penguins.

The high temperatures frequently caused lumps of ice to break away from the faces of the surrounding glaciers; at times these breaks sounded like the crack of a rifle-shot, at others like the boom of a cannon. A little snow began to fall early in the morning of the 22nd, but by the time we had got up, it was calm and warm once more. My diary reads:

The glacier which lies to the south of the Island has been calving large crumbling pieces of ice which fall into the sea and create temporary disturbances of the water. In the afternoon the sky clouded over, the barometer fell, and the

wind, which was still only a light breeze, veered from north-east to north, then to south and south-west. The moon is full or nearly so tonight; it produces a wonderful effect on the snow-capped islands around us, the glacier's face and the still waters which reflect its light.

We went over to Coal Point before breakfast on the 23rd to bring back some oddments of gear. One of the catchers had unloaded some of her stores there by mistake. On the way back we found two seals which we killed. After breakfast we killed another and before lunch had cut them up and brought them back to the seal-meat dump near the hut. Two of them were bull seals and the other was a young one. Out of curiosity I weighed the largest, and found that the meat and blubber together weighed 549 lb. The meat alone weighed 318 lb. and the blubber and skin 231 lb. The heart weighed 2 lb. and the liver 14 lb.

For one of our suppers, as a variation of diet, we shot four Brown Skuas and ate their breasts fried. They made quite good eating, but I personally had no great keenness for skuas, for they are such scavengers and murderers that they will eat anything from putrid whale- or seal-meat to eggs and baby penguins. If any seal-meat was left unprotected, even for a moment, they were upon it.

By some error no forks, with the exception of one I had in a picnic set, were included in our equipment, and as I was rather tired of eating only with a knife or my fingers, I made myself a two-pronged fork from a piece of packing-case wood.

It was my turn for meteorological observations during the night. It was a hateful job, getting out of a warm

sleeping-bag to go out into the cold air, leaving behind three companions comfortably sleeping. We had arranged a slightly different routine with the observations, each of us taking the readings at midnight, 4 a.m. and 8 a.m., in turn every four days. Previously I was responsible for all the midnight and 8 a.m. readings as well as the day-time ones.

While having lunch we heard a loud crack in the water-boat and going below found that one of the cross-beams which supported the deck had cracked across. We therefore set up four wooden posts between the floor and the ceiling to give extra strength. Additional excitement arose from an iceberg outside in the Channel, near the Island, calving off pieces periodically to the accompaniment of much noise. Every time we heard a rumble we all rushed out of the hut expecting a calved fragment to cause sufficient wash to flood the Island. Towards evening, thank goodness, the berg moved away.

Late on the 28th there was a fairly heavy fall of rain. Some water, luckily not much, came through into the boat where we were sleeping; and we began to experience an example of what Water-Boat Point could supply in the way of discomforts.

Chapter V

AN ALTERATION IN PLANS

The morning of 30 January brought an improvement in the weather, and some sunshine, so we climbed up the mountain on the mainland to the east of us. We used snow-shoes and found them highly successful on the glacier, although, except for Wilkins, we were novices in their use. The beginning of the mountain slope was about a mile from the hut and was reached by crossing the glacier which rises from the shore in a fairly steep, rounded slope to a terrace-like top; the latter leading to the steep, rocky slope of the mountain. We found a few small crevasses in the glacier but our snow-shoes acted as bridges and prevented us from falling into them. Snow-shoes are awkward to use and tire the legs at first, but in a very short time one becomes accustomed to them and soon learns to avoid tripping up. The interlaced leather thongs gave a useful grip in climbing up a snow slope. After three hours' climb we arrived to within 500 feet of the top, but here there were too many crevasses to allow us to go farther, so we returned, taking only thirty-five minutes in the descent.

The next day was again fine and sunny, and we set off about noon to make another attempt to climb the mountain. This time we tried a different route; we badly wanted to reach the summit so that we could see what the land was like farther inland and whether it would be

possible to cross with sledges and reach the Weddell Sea on the other side. We wore snow-shoes again and were roped to each other. Lester fell into a crevasse on the way; on the return journey Wilkins fell into a continuation of the same one. Later we had to discard our snow-shoes and by 4 p.m. we had climbed the mountain side, and were within 50 feet of the top, about 1560 feet above sea level as near as we could tell. From this point we could see beyond, so we did not attempt the last part of the ascent which was very dangerous owing to the loose rocks. As we had lunch at the top, we called it 'Mount Lunch-Ho!' Our plans were a failure, however, for, instead of finding, as we had hoped, an inland plateau, we found another ridge blocking the way. It was obviously absurd to contemplate hauling sledges over such country as this, and even if we had done so we could have carried only loads which would naturally have precluded any possibility of a long sledge journey once we had reached the side facing the Weddell Sea.

A cloud enveloped us for a short time while we were having lunch. After lunch I collected about 30 lb. of geological specimens and examples of the moss and lichen on the scree. The others were more fortunate than I on these trips, for I was usually encumbered with a knapsack, a geological hammer and my specimens. We found the first part of the descent, over the scree, quite exciting, for we continually dislodged the loose rocks; but in spite of this we took only an hour to reach the bottom of the glacier, and arrived back at the hut by 7 o'clock. The tide was up and we were obliged to take off our boots and socks at the foot of the glacier and wade

across to the Island. It was not exactly a pleasant job paddling in icy water.

Wilkins, Lester and I went off fishing in the afternoon of 2 February. We first tried from the sledge-boat, but as we found it none too steady we changed over to the life-boat. We expected the same luck as we had had when fishing outside Deception Island but were disappointed, for we caught nothing. Whilst we were out in the Channel a strong breeze sprang up and we had a hard pull to get back to the harbour. It was lucky that we had not taken the sledge-boat or we should have had a lively journey. My left leg felt pretty cold by the time we reached the hut, for I had shipped some water into my sea-boot as we were pushing off.

3 February was a gusty day and at times the wind was blowing hard; it was overcast all the while and the temperature was high. We were patiently waiting to search for a starting-off place to cross to the Weddell Sea, at the lower end of Andvord Bay, but the weather was too bad to set out. We were rather an unhappy lot; Cope had toothache and Lester felt ill. In the afternoon we killed our seventeenth seal, this time a pregnant female.

At night the waves washed up to the bows of the water-boat, but as it was raised a little, luckily nothing got wet. The tide was very high when it was in and came within a few inches of the end of our boat. How thankful we were that there were no rough seas in the Channel.

During the afternoon of the 5th a whaling-catcher passed the Island and we could just see those on board waving to us. It was one of the *Solstreif's* boats.

Our water-supply was easily solved at that period. At the foot of the glacier there were trickles of water, coming from between the ice and the shore. Under these trickles we placed aluminium pannikins, which soon filled with clear, clean water. We took it in turn each day to replenish the water-supply, working in pairs. One day, when it was Cope's and my turn, I slipped when returning to the hut and poured a good deal of water down my neck, much to Cope's amusement and my discomfort. The temperature of the water as we collected it was 33° F.

Before noon on the 6th we started off in the life-boat for the lower end of Andvord Bay. We sailed slowly across to Round Island, a small island about 200 yards long, which lay nearly opposite our own Island at the foot of the glacier fringing Lemaire Island. By a stroke of good luck we found there the lid of an aluminium cooker which had been blown off the Island a few days back. From Round Island we made for Shag Point, which is the south point of the entrance to Andvord Bay, and was named by us after the colony of Blue-eyed Shags (*Phalacrocorax atriceps*) which we found there. We did not land, but could see that there were many of the nests of these birds amidst the rookery of the Gentoo and Ringed Penguins. I took a series of sea-surface temperatures as we sailed along and found that the average of six readings between our Island and Shag Point was 33·2° F.

From Shag Point we sailed on a little farther, and then as the wind had died down, rowed steadily until half-past ten, when we arrived near the lower end of the bay. Three of us rowed whilst the fourth steered and rested. He who was unlucky enough to have a turn with

the home-made oar became well acquainted with blisters; but at the best it is hard, monotonous work rowing a heavy life-boat. We tied up to some large boulders at the foot of a high cliff and at midnight attempted to sleep.

Without exception it was the most uncomfortable night's rest I have ever had. Lester and Wilkins lay up in the fo'c's'le on ice-picks, snow-shoes and a shovel, but they were in luxury compared with Cope and me, for we slept, or rather tried to sleep, amidships under the seat on some cases of pemmican. In addition to its hardness our bed was too short and our heads dangled over one end and our feet over the other. We could neither turn over on our sides nor arrange the blankets under us, as there was no room to move between the cases and the underside of the seat. It was with no reluctance that we arose at 4 a.m. to tuck into a hot breakfast. After the meal we climbed the cliff at the foot of which we had spent the night and were able to get a view of the neighbourhood. From our point of view the latter did not look very hopeful. Rather curiously we found some grass growing on the cliff; evidently the seeds had been carried there by sea-birds. We were back at the boat by 8 o'clock, and set off to the east side of the bay, rowing two at a time in one-hour spells. On this coast we found a Gentoo Penguin rookery and collected specimens from the rock exposure.

The return journey was even harder work than the outward. One strong gust of wind saved an hour's pulling, but most of the way we rowed against a dead head-wind after an attempt to tack had failed. We arrived home at 7 p.m. It took most of the next day for

us to recover from the effects of our exertions while rowing. That night it was Cope's turn to take the meteorological observations and, as he was crawling over to his sleeping-bag, he dropped the electric torch on my head just as I was on the point of falling asleep. However, these little incidents cheered us up, though I should have better appreciated the humour of this one if the torch had landed on somebody else's head.

In the late afternoon of the 9th we went for another sail, an unsuccessful one as it happened. This time we went to Bryde Island, which lay a little west of south from our hut. We started off in fine style under sail, but soon had to use the oars. We went ashore on the island on a rock patch which was occupied by a Gentoo Penguin rookery, and was also a breeding-place of Dominican Gulls. A fair amount of moss and lichen was growing. Afterwards, we rowed to a small island about 500 yards away, close to the main island. There we saw clearly defined glacial striations on the rock surface; showing that ice recession had taken place not long before. The last part of the journey was against a head-wind from the north-east, and we did not reach home until after midnight.

Two uneventful days passed, dull and very windy; they made the hut very draughty. The stove set fire to part of the hut, and as this had happened before, we placed a piece of tin in front of the woodwork to protect it.

On the 12th it was fine again, sunny and warm, with the temperature between 35·0° F. and 26·5° F., so we set off at noon for a row around, going first to the north-

east point of Lemaire Island where we found a penguin rookery, deserted for some unknown reason. Half-way between Lemaire Island and Shag Point we took a sounding and found a depth of 126 fathoms. At Shag Point we went ashore, and I climbed to the top of the cliff which housed the rookery, and found a lovely terrace green with moss. Here, as on other rookeries, we found that the Ringed Penguins occupied the higher ground and the Gentoos the lower ground. I had the funny experience here of being attacked in concert by Ringed Penguins. Often enough individual penguins had gone for our feet, but never before had they attempted co-operation. We never met any real hostility from the Gentoo Penguins which are not so vicious. There were many Shags and a few Sheathbills nesting amongst the penguins.

We next made our way across to the north point of the entrance to Andvord Bay, taking a sounding half-way across and finding a depth of 132 fathoms. From there we returned to Water-Boat Point. While we were out we noticed a good many Fin Whales swimming in the channels.

We adopted a more definite routine for our meals when we had settled down a little. Breakfast was at 9 a.m. and consisted of pemmican with ship's biscuit, tea and sledging-biscuits. Lunch was missed. Tea-time was about 3.30 p.m., when we had tea, biscuits and jam or marmalade, with sardines or baked beans as an occasional luxury. Unfortunately we had no great supply of jam, marmalade, sardines or baked beans, and were obliged to ration ourselves. Supper was at 8.30 p.m.

and we had seal-meat either stewed, fried or minced, or such tit-bits as liver or kidney. One night we had a hitherto untried luxury—a seal's brain; this was repulsive to extract, but when cooked was delicious and resembled soft fish roe without the fishy taste.

In the afternoon of the 17th we went out again to try and catch fish but once more failed. As compensation for our trip, we landed on a small island about half-a-mile north of our Island, which lay close to the edge of the glacier, and obtained some interesting geological specimens.

Before supper an Elephant Seal measuring about 10–12 feet in length arrived on the shore near the hut, and as we did not want to run the risk of his playfully rolling over and knocking in the hut, we egged him back into the sea. We noticed that his skin was cut about in places, evidently old wounds probably received while fighting.

As the 18th was fairly sunny we set out before noon to row once again to the far end of Andvord Bay to find some access to the plateau which, we were convinced, formed Danco Land. Unfortunately we had to content ourselves with short trips like these, unless one of us stopped behind to attend to the dogs which could only be left for a very limited time. Our luck was out, for when we were about a quarter of the way into the bay we found thick drift-ice through which we did not think it advisable to try and force a way with our frail boat. We should have run the risk of being hemmed in by the ice and kept prisoners perhaps for some days. Nevertheless we made three landings to obtain geological specimens.

In an entry in my diary for 20 February I recorded that:

It was my turn to take the meteorological readings during the night, and I only wish that my other nights could be as entrancing as this one was. It was so calm and the surrounding land was so extraordinarily appealing that it gripped my heart in a strange way. The Antarctic has a charm of its own which makes one forget its bad days and almost love it. Perhaps it is only the fascination of a wild, lonely country, but it has a poignant appeal that one never forgets.

Cope and I fetched in a quantity of ice in the morning. In addition to what water we could get from the glacier foot, we also supplemented our water-supply with a large pannikin or two which we kept full of ice on a shelf above the stove in the hut and replenished as the ice melted.

A large iceberg lay off the north-east point of Lemaire Island that day. It had probably caught on a submerged shelf projecting from the island. Our own Island had a submerged shelf jutting out a little way into the Channel and ending abruptly in deep water, and I have no doubt that this was also the case with the mainland and the other islands around us.

It started to rain in the evening and kept on until midnight, when it changed to snow. We had an unpleasant time in the bunks and living-quarters; the water dripped through on to everything, including our sleeping-bags which we had to cover with skins.

Next day there was a slight improvement in the weather, so we were able to get straight in the water-boat once more, but there was more rain the following

afternoon, and this continued until night. When I crept into my sleeping-bag I found a pool of water inside, and all through the night water dripped through on us. We covered ourselves as much as possible with spare skins. In spite of all this discomfort we got a lot of amusement from hearing each other's groans and curses as pools formed in the bags or drops fell on our heads.

Rain fell during the greater part of the 23rd. By this time the sleeping-bags were fairly sodden. But every cloud has a silver lining; the wet had swollen the wood planks which formed the boat, and many of the cracks had, in consequence, closed up. The rain mixed with guano made the rookery like a quagmire. The bad weather continued until the 25th.

We had realized for some time that, as far as the Expedition was concerned, we had come to a dead end. Our prospects of getting across Danco Land were small, and of carrying out the intended work of exploring the west coast of the Weddell Sea practically hopeless. On the evening of the 25th we had a long discussion as to our future plans. We then agreed that Cope should return to Montevideo and endeavour to secure a ship and additional staff there, and come down the following season to transfer the base to Hope Bay. Wilkins declared that his intention had been and still was to return home by a whaler if by chance a catcher called to see us before leaving at the end of the whaling season. Lester and I agreed to stop at Water-Boat Point until Cope arrived either in his own ship, or, failing that, in a catcher. Cope promised to pick us up if possible between

14 and 28 February 1922; in the meantime we were to carry on with the scientific work and look after the stores and dogs. All these tentative arrangements depended, of course, on whether we could find a whaling-catcher or factory in De Gerlache Strait to take Cope and Wilkins back. As the whaling season was drawing to a close, it was decided that three of us should sail to Nansen Island and endeavour to find a whaling factory. Since I was the least experienced in navigating and seamanship, I agreed to remain behind and attend to the dogs, the meteorological observations, and so on. Nansen Island was about 25–30 miles away, so that if all went well they would not be away for long.

We got up at 2 a.m. on 26 February and an hour later Cope, Wilkins and Lester left in the life-boat; I stood watching them for some time until they disappeared from sight. I must confess that I felt uneasy, and would have greatly preferred to go with them rather than stay behind on my own; the possibility of having to spend a year or more alone in the Antarctic should any accident befall my companions (and accidents are not unlikely in these unkind regions), filled me with dread whenever I let myself think of it. The Island seemed very quiet and deserted without the others about, but I busied myself with the many jobs, from feeding the dogs to attending to the water-supply, which had to be performed during the course of a day. In the early afternoon I killed and butchered a seal.

I had intended getting up at midnight, but either the alarum clock failed to go off or I slept too heavily, and I did not awake until half-past five the following morning.

I got up and went to the meteorological screen, finding, not as I had hoped, a fine day, but thick fog all round, so thick that even Coal Point was only just visible. It was not until 6 p.m. that the fog lifted, to return later and finally disperse about midnight.

At midnight, when I took the instrument readings, the night was lovely and the moon and the stars were shining. I stood for a while by the screen waving the hurricane lamp in case the others should be anywhere about. When I went out again four hours later I found that some thin ice had formed on the water in the little bay by the hut.

Whilst fetching some water from the glacier later in the day I heard a loud bang and a heavy crash from the direction of Lemaire Island. This was caused by the breaking away of a portion of the glacier face; no doubt the day's warm weather hastened the collapse.

In the afternoon I saw a whaling-catcher coming along the south side of Lemaire Island and immediately thought that the others had returned—but I was disappointed, for it passed by without taking any notice, although I waved and fired a revolver shot. However, I knew that there must be a factory about somewhere.

When I got up for breakfast on 2 March, rain was pattering on the deck and the dogs were barking and kicking up a mournful row because one of them had got loose.

Snow—the wretched wet variety—fell throughout the morning. The ground around the hut was again in a terrible state. The dogs hated this sort of weather and usually stood on top of their kennels in preference to

lying inside them. I used a towel as a muffler, finding it more suitable than my woollen one when the weather was very wet.

The previous afternoon I had seen a catcher near Shag Point and this morning there was another in the same position.

Near the top of the glacier face, close to the spot where we collected water, there was a large overhanging mass of ice, which had been threatening to break off for some time. We had been expecting it to fall at any moment and had wondered what would happen when it did. Our fear was that if the tide was high, it might set up waves large enough to swamp this low-lying Island. In the morning two large pieces fell off with a roar and a crash. These, thank goodness, lessened the size of the mass. I hoped that the rest would soon fall; I prefer to get inevitable unpleasantnesses over and I like to know and see what is happening rather than to be taken unawares. Surely enough my wish was granted; at half-past one a few warning pieces fell, and then suddenly with a terrific roar the whole mass came down. Fortunately the tide was low at the time though great waves rolled out, luckily doing no harm. I looked on with open mouth and even the dogs were quiet for once. A minute or two afterwards there was silence, and all that remained was a heap of ice at the foot of the glacier. There had been a continual bombardment of falling ice from neighbouring glacier fronts, sounding like the boom of distant guns.

What with the meteorological readings and the noise of the dogs I got precious little sleep. The dogs had been

breaking loose rather frequently and directly this happened the others felt it their duty to 'sneak'.

Snow fell nearly all day on the 3rd. The Channel between our Island and Lemaire Island and the south was covered with thin 'pancakes' of ice. To the north it was clear. Snow lay thick on the ground despite the warmth of the rock and the guano which were melting it underneath.

I heard a ship's whistle after lunch on the 4th, whilst I was in the hut, and rushing out saw the catcher *Bjerk* close by. At last my companions had returned. They soon landed on shore. There was pandemonium for an hour while Cope and Wilkins collected their belongings and went on board. Lester and I accompanied them in the life-boat. After many hand-shakes and good wishes, they left us, and a last blast of the whistle wished us luck. We rowed quietly back to our little harbour, moored the boat and returned rather sadly to the hut. It was strange and a little frightening to be left as we were, two people alone on a vast continent equal in area to Europe and Australia combined, with a year to pass before we were due to see any other human beings again. I fancy that no such situation has occurred before. We were taking one big risk—though admittedly a sporting one—that during the year neither of us would have a serious illness or a bad accident. Neither Lester nor I knew much about doctoring, so heaven would have to help him who crocked up!

We sat up talking for some time before we went to bed, and Lester told me of the exciting trip they had had to find the whaling factory. Although they left here

early on 26 February, they did not find the whaling harbour at Nansen Island for two days and a half owing to fog and difficulties due to the inaccuracies of the chart. In the middle of the first night, whilst drifting in Wilhelmina Bay, a school of a dozen or so whales passed by and under the boat and caused it to jump about like a cork on a choppy sea. When they did find the harbour at Nansen Island they found that the *Thor I* and *Svend Foyn I* were the only factories still operating. Unfortunately neither of these could spare a catcher as they had only a few more days left to complete their cargo of oil, and the captains advised going to the *Solstreif* which was lying in Port Lockroy about 45 miles away. They left at 6 p.m. on the 28th and reached Port Lockroy about 7 the following morning. The wind blew so strongly and with such treacherous gusts that they were obliged to lower sail and row for a great part of the way. In landing on a small beach in the Neumayer Channel they ran on to a submerged reef and damaged the boat, causing her to leak badly. Eventually they found the *Solstreif* at Port Lockroy and were very kindly treated by those on board. The mate, most considerately, had the life-boat hauled up on deck to be recaulked, painted and overhauled. Lester was able to collect a lot of useful oddments from the *Thor I* and the *Solstreif*, including a half-bolt of canvas and a luff-tackle.

5 March was a beautiful, sunny day. Before lunch, while we were working near the hut, we heard a ship's whistle and saw the *Graham* near by. We went on board and found the captains of the *Thor I* and *Svend Foyn I* there. They had delayed leaving in order to visit us and

give us a last chance to return if we so wished. It was a very thoughtful action on their part and one which we greatly appreciated. We had lunch on board and when they had gone we knew that we had finally 'burnt our boats'. Independently of our other plans, they promised that the first factory that came to the Straits the following year would send a catcher down to us. The captain of the *Svend Foyn I* was a curious mixture. He could be hard and awkward at times, but to us he showed his extraordinarily admirable qualities in coming for us as he did, because he felt some uneasiness for our safety.

Chapter VI

IMPROVEMENTS TO THE HUT

Now that we were left to our own devices we had to think about the winter which was getting near. It was obvious that we could not live in the hut, in its present condition, through the winter, without considerable and unnecessary discomfort. We therefore set to work to make the best use of the materials we had, which were rather limited. How we envied those expeditions equipped with a proper hut! We had originally reckoned on using Nordenskjöld's hut at Snow Hill Island, but the alteration in plans lost us that comfort. With the half-bolt of canvas which Lester had begged on his visit to the *Solstreif* we worked wonders. We moved the loose cases off the aft part of the water-boat's deck so that Lester could cover the boat and also the hut above it with canvas. For security against the strong wind the thin canvas-covered window was blocked up. In a couple of days Lester had progressed so well with his beloved palm and needle that he had finished covering the east and south parts of the water-boat, and water ran off the deck instead of into the bunks. Somehow I can never watch a woman making a cover for a settee or a chair without a feeling that something will go wrong with the result, and as I watched Lester enveloped in great folds of canvas I had that same uneasy feeling and wondered whether it would come out all right. But he

sewed and sewed and by 10 March the back of the job had been broken. It was quite a relief to hear no more of selvedges, the advantages of pliable leather for palms, and the like. On one or two occasions my boredom was relieved by sounds of blasphemy at the discovery of one side of a selvedge sewn to the wrong side of another. However, it was work to be proud of and the cover fitted well. If Lester had that swelling of pride which rises in the breast of the proud housewife at the sight of her completed chair-cover (by the way, I have never yet seen one that was right at the first fitting), then he was fully entitled to it.

To finish off the job properly he tried out some seal oil from our stock of blubber and painted the canvas with it. This rendered it absolutely water-tight, and we felt thankful for somewhere where we could stow gear and know it would not be saturated. We were soon able to test Lester's skill, for there came a wretched day with snow, sleet or rain falling most of the time, high temperatures, and wind from the north-east. Although a good deal of rain fell, none came through the roof, thanks to Lester's good workmanship, and we were able to go to bed in complete comfort instead of finding pools of water everywhere.

Having settled down with the needle and palm, Lester next made canvas flaps to the fronts of the home-made dog-kennels and these certainly made the dogs more comfortable. His last piece of handiwork was a cover for the sledge-boat. As he had come to the end of his canvas, no further luxuries of this kind could be entertained and his enthusiasm was, perforce, curbed.

Meanwhile I had not been idle. My first job was to pile many more large stones round the bow of the water-boat to prevent any possible chance of its slipping forward and causing the superstructure to collapse. We also fitted a wooden spar about 14 feet long against the bow. One end was embedded in the ground, the other was cut to fit round the edge of the bow.

The next job was to kill off a number of penguins to lay in for the winter meat-supply. This was work I could never enjoy, but it had to be done by someone. It was particularly distasteful to me, for I had begun to study their lives seriously and had become fond of the amusing creatures. We looked on them as our friends and the one redeeming feature of life at Water-Boat Point.

The usual method was to shoot them with a rifle and then, if they were not killed outright, to hit them on the back of the head with a geological hammer. The latter operation was quite sufficient by itself, but the penguins were becoming elusive and seemed to scent danger. The first hundred I examined carefully, measuring them and noting the contents of the stomach. It was quite common to find in them between twenty and fifty small pebbles which the birds swallow to aid them to grind up the hard bodies of the little shrimp-like crustaceans called Euphausids on which they feed.

Their preparation was soon reduced to a fine art and I could decapitate them, cut them open, cut off the breasts and legs and take out the hearts and livers very quickly. At my period of maximum efficiency I could butcher them at the rate of fifteen an hour. My work was hindered a little by their changed habits as the period for

quitting the rookeries approached. Thus, in my diary for 8 March, I recorded that: 'During the day-time the rookeries are nearly deserted and the young birds are mostly down on the beach or swimming around in the shallow water. The chief occupants of the rookeries are the old moulting birds. There are still several hundred moulting birds on the glacier slope.'

We had intended storing the winter meat in a hole cut in the glacier slope, but we were doomed to disappointment, for when we began to dig down we came on a layer of penguin guano every foot or so, and no clean spot could be found. I therefore fixed a large box with a hinged door on some stones below the meteorological screen. The box contained two shelves arranged to give plenty of air space and held the edible parts of fifty penguins. Some stones and lumps of ice were piled up around it which made it a good cold storage until the snow-drifts arrived. Later two more boxes were installed near the first.

In the end it became a little difficult to find birds, and I noted on 18 March that owing to the scarcity of penguins on the rookery during the day it took me close on two hours to secure thirty. On the 19th, when I had slaughtered two hundred, I stopped killing the poor little fellows, and very thankful I was.

In between sewing canvas and killing penguins there was a multitude of other small things to be seen to. Not the least important was to fix up the gramophone more conveniently by constructing a little stand to keep it level on the deck of the water-boat or the floor of the lounge, to use a more homely expression. Whichever

of us was not doing duty as cook sat by it and changed records. Without this instrument life would, at times, have been very dull indeed. Unfortunately some of the records were of songs which had had their day, and a number were of a dolefully sentimental nature, such as 'Remember me to Mother, dear', and 'When the fields are white with daisies'. We had, apart from these, a few good records and these we thoroughly enjoyed.

As our number was reduced to two we had to revise our system of work. We took it in turns to take the meteorological observations from midnight until 8 a.m., and the one who took the 8 a.m. observations cooked the breakfast, the other the tea. The one whose reading was at midnight gave the dogs their evening meal and the other cooked the supper. It was my job to feed the dogs in the morning and to take the meteorological readings during the day-time.

The alarum clock, which we had found so useful, objected to the cold at night and behaved erratically, but it was too large and noisy to take into the sleeping-bag as Lester did the chronometers. We also had trouble with the matches; the damp affected the paper on the sides of the box so that after a few matches had been struck it was worn away. We had to strike them on the wooden beams of the hut or on some odd bits of emery cloth which we happened, by good fortune, to have with us. Such a difficulty as this could easily be overcome in a hut, but had we been sledging it might well have been disastrous. The boxes should, of course, have been sealed up in air-tight tins.

Some entries in my diary give a general impression of our life during this period:

MARCH 10. Before breakfast, the weather being fine for a change, we went over to Coal Point in the life-boat with the sledge-boat in tow and brought back some cases of provisions. An Elephant Seal was lying up against the latter and has not improved their appearance. Snow and rain and strong gusts from the north-east hindered our work during the afternoon. The rookery is in a terrible mess, guano everywhere.

We had penguin meat for supper. We have not seen any seals[1] lately and wish some would come up on the beach.

MARCH 11. We had intended unloading the cases we brought back yesterday but found too much ice on the shore. We are now only able to work outside until 7 p.m., after which it becomes dark.

For supper we had a variation of food—boiled shag breast and liver. This we found excellent.

Rain started falling heavily at 8 p.m. and continued all night. The hut leaks badly in the kitchen part, which is not yet covered over. The temperature has been between 37·0° F. and 36·0° F. all day.

MARCH 13. We have seen a few seals swimming around but not one has come up on shore.

A whaling-catcher passed by in the morning evidently still after whales.[2]

MARCH 14. At breakfast time we found the sun shining and a welcome improvement in the weather. The sunshine only

[1] Unless mentioned to the contrary 'seals' always denote Weddell Seals.

[2] This was the last catcher we saw before our relief.

lasted for three hours however and the remainder of the day was cloudy.

While I was at the meteorological screen at noon I saw a female seal on the rocks at the far end of the Island. Lester successfully shot her twice in the head with the revolver and I cut her throat. She was a large specimen; we killed her at one o'clock but it was not until nearly four o'clock that we had finished cutting her up and had carried her to the higher ground. We had a race with the incoming tide to get the meat safe above sea level. Our sea-boots were saturated. We carried some of the meat to the hut and left the rest until tomorrow as we were both uncomfortably wet. As a result of our work we were able to have a meal of fresh seal-meat for supper—kidney and meat minced together.

MARCH 16. Before supper we unloaded from the life-boat the boxes which the loose ice in the Bay had prevented us removing before.

Several Fin Whales have passed by swimming northwards up the Channel.

MARCH 17. Up at 4 a.m. and did not turn in again. The morning was cold and fresh but about 6 o'clock the sun rose above the mountains, filling the air with warmth. After taking observations I walked over to Coal Point to fetch our ski. The little lake was covered with ice about a quarter of an inch thick on which the penguins were able to walk.

After breakfast we killed and cut up a male seal, 8 feet 2 inches in length, this time taking only an hour-and-a-half to do it.

Before supper we took the life-boat and sledge-boat round to Coal Point and brought back some cases of pemmican. I dislike carrying heavy cases at the best of times but when they are plastered with penguin and Elephant Seal guano it is a filthy job. However, the smell of this is far less objection-

able than that of the mixture of whale blood and oil on board ship.

MARCH 19. A glorious day, just what we wanted to enable us to get along with our work.

It is now possible to work outside only up to 6 p.m. The sun shone today until 4 o'clock when it sank behind the mountains.

On the 21st we had hoped to go over to Coal Point in the boat to fetch the rest of the pemmican cases, but we found the Bay full of ice and the shores littered with blocks of ice. We had to wait until the following day, when, after tea, we took the life-boat and the sledge-boat, and at Coal Point anchored the life-boat in the deeper water, using the sledge-boat to get ashore. It was no easy matter to load one of these top-heavy sledge-boats, but after the expenditure of a good deal of effort and a certain amount of bad language, we brought back the last batch of the cases, twenty-seven in all. With these we could begin the building of an outer hut. I had already levelled the ground on which it was to be built, and after tea on the 23rd we made a start on the east wall, building it of pemmican cases placed lengthwise and carefully laid on each other so as to be properly vertical and level. In the spaces which the battens made between the cases we rammed sand from the shore which made the walls stronger and less draughty. Over the cracks in the walls we nailed canvas and sacking. A hole giving access to the coal heap was left in the middle of the lower part of the east wall. The cases which formed the walls were then battened together.

By the 27th the walls were finished and all was ready for the roof. We had just one case to spare at the end of building operations. Lester fixed guy wires from the hut to some large rocks.

The new part of our home measured 10 feet 3 inches by 9 feet and 5 feet 9 inches high. There remained only the roof and the door to be completed. The former was made by interlacing bamboo poles across from wall to wall. We tied the poles together where they crossed each other and fixed the ends to the top of the packing-case walls with hoop-iron which we took from the packing-cases, bending pieces of iron over each pole and nailing them down on either side. The poles made a strong roof, but unfortunately a flat one, a disadvantage we did not fully appreciate until later when snow-fall became more considerable.

Next we covered the roof framework with the life-boat sail and sewed it to each of the thirty-six intersections of the bamboo poles. We passed the sail-needle through the canvas to each other, Lester sitting on the roof and I standing beneath it. The door was made chiefly of wood from one of the cases in which our cigarettes were packed. The hinges were made from seal-skin.

Owing to the covering of snow which had now formed on the Island, it was difficult to remember the whereabouts of boulders, and slips were frequent. The penguins seemed to revel in the snow and were quite lively again; many stopped moulting. Owing to the lack of a firm surface, they found it difficult to walk, so they travelled along in the soft snow on their breasts, propelling

themselves forward with their feet and flippers, using the latter like oars. Fights were much more numerous than they had been when they were bringing up their young. The quietness was continually disturbed by the sound of their blows as they chased each other around the rookery. The old birds had frequently to put the younger generation in its place. The Ringed Penguin rookery on South Island was a veritable babel of noise. There the birds screeched more than ever, and many a time we praised heaven that we lived amid the quieter and lower-keyed Gentoos, and not near their squawking cousins.

We had some bad weather on the night of the 24th. It was better on the 25th, and when I went up to the meteorological screen at night there was a great improvement in the weather. It was quite light with the snow lying on the ground and the moon trying to shine through the clouds. The white-mantled rookery was studded here and there with black patches which showed where the penguins stood or lay.

Sometimes a bad day had its advantages in that it enabled us to accomplish something which would normally be left undone. After some weeks of laxity we cleaned our teeth in conventional style and vowed that henceforth it was to be a regular daily practice. We kept our vow; and from that time teeth were cleaned regularly after breakfast. It was good to feel that at least one small part of our anatomy was clean, even though the remainder left much to be desired. We also brushed and combed our matted locks. Lester had by then developed elegant side fringes which fell over his ears.

We had rather a hard blow when we took the bottles of Worcester sauce out of their case, for we found one broken, and could have wept. We had only the following in the way of flavourings to last us at least until January 1922:

7 bottles of Worcester sauce.
2 small tins of ground celery-seed.
4 tins of curry-powder.

We did not look forward to the prospect of eating seal- and penguin-meat without the disguise of flavouring when our supply was finished.

Later came another indifferent day when some hail fell and it snowed more or less all day. The sky around was gloomy and to the north it had a yellowish snow-laden appearance. But life had its compensations, for on the following day (27 March), despite a windy early morning, the sun put in an appearance about 11 a.m. and stayed with us until it sank behind the mountains. And how beautiful a sunset it was! Perhaps I can best describe it by quoting directly from my diary:

The sunsets are magnificent these days. Directly the sun disappears behind the mountains of Lemaire Island the most glorious colour-effects are produced. The channel between Lemaire Island and ours flushes a reddish colour which the rippling water seems to make alive. The sea beyond is steel-grey. The mountains to the south are tipped with gold, and all around the scene looks as if it were hewn from marble or moulded like a gigantic iced-cake. Here and there a mass of dark rock breaks the white expanse. The silence is disturbed only by the lapping water or the occasional crow or queer squawk of a penguin. In the fiery sea, fragments of gleaming

ice drift peacefully as the current takes them. Later, as the sun sinks lower and lower, the sky becomes splashed with silver, but soon this is gone and night creeps on and all is dull above. A dream-like scene! One walks back to the hut and, with almost a shock, returns to tangible prosaic things.

During the night we registered our lowest temperature until then, 19·5° F., but the cold brought with it another wonderfully fine, crisp day. Snow lay hard on the ground and made walking much pleasanter than before. Immediately the sun sank about 3 p.m. we felt the rapid cooling of the air and work became more and more difficult to perform.

Now for a tale with a moral. One day we spotted a seal and after two unsuccessful shots with the revolver, we pole-axed her. As we were busy with other things we left her to be cut up later in the day. After tea we went off to see the seal, but just as we began to cut her up, Lester saw another, which we killed. The first seal was small and we soon had her butchered and carried to the hut, but the other, a larger female, we left for the next day. Somehow, however, it got left over until the following day. The weather was not helpful and the seal was in a bad position for cutting up. When we opened the inside there arose the most sickening corpse-like smell that could be imagined, not unlike that from the rotting inside of a whale. The only smell I have come across since which approximated to it was from a doctor's hands after he had just finished a post-mortem examination of a body which had been in a well for a few days. We got back to the hut soaked through and

reeking with an odour of putrefaction, which made us thoroughly miserable. We thought in our ignorance that the smell would disappear with cooking, so we had some of the meat for supper, but neither of us could finish it. Our hands and clothes were permeated with the dreadful smell. Moral: never leave a seal till to-morrow if you can cut it up today.

To enable us to carry seal-meat from the place where we butchered it across the rookery to the hut, we constructed a small hand-barrow which consisted of a box slung from two shafts fixed at the sides and projecting beyond to form handles.

On 30 March bad weather returned; the thermometer rose and the barometer fell rapidly. Fine snow fell nearly all day, driven by a strong wind from the north. The 31st was just as bad. The 8 o'clock observation that evening was a source of considerable discomfort to me. I sallied forth with lamp and note-book and arrived safely at the screen. Snow was falling and a very strong wind blowing. The screen was plastered over with snow and by the time I had the door nearly open, the hurricane lamp blew out. Owing to the darkness and the falling snow I had to chance which was the way down and had nearly reached the bottom of the hillock when I slipped and fell sideways into the snow-drift. I struggled up and was much relieved to find that I was still gripping the lamp and my note-book. After spending several minutes in the hut, trying to light reluctant matches, I returned to the screen and this time made the readings successfully.

Matches became more and more of a nuisance. Not

only would the boxes wear out after being struck about a dozen times but also the heads of the matches often fell off. In order to get a light we sometimes, or rather, nearly always, had to strike two or three matches. This performance at midnight and 4 o'clock in the early morning, while we were only half awake, tried our tempers more than a little.

Chapter VII

PREPARATIONS FOR WINTER

April 1 began with a tragedy. Lester walked over to the glacier after breakfast to see if any water was trickling off. He called me over and showed me the drowned body of poor little Peggy, one of our dogs, lying on the shore. She had been held prisoner near a rock by a piece of chain attached to her collar which had caught in a cleft. Peggy had broken her chain and had been loose for several days, eluding all our attempts to catch her, and slinking back to the vicinity of the hut only at night. To lose her was like losing a companion. We buried her that morning and built a stone cairn over her.

In the afternoon we busied ourselves with the dogs and equipped each of them with a large stone around which was wound a wire with a loop at the top. To this the dog was attached and could be moved about as one wished. For some unknown reason Florrie and Swift—a most ill-assorted pair—took to sharing Swift's large box. Swift was the loser by this arrangement, for Florrie had a terrific appetite and as soon as she had gulped down her own share of meat, she started on Swift's.

We had one stroke of luck. In the afternoon we heard a sudden noise from the direction of the glacier as a great mass of snow slid down, uncovering a small torrent of water. We soon filled our pannikins. I think that a dam

of water somewhere higher up must have collapsed, or perhaps a crevasse had become blocked up so that it filled with water, and had then given way.

We thought we would like to celebrate Easter, so after supper Lester looked up the date of Good Friday in the Nautical Almanack. Alas, we found that it had passed unnoticed the previous Friday, but to make up for it we had two extra *crème de menthe* sweets after supper. We were very fond of these sweets, but owing to limited supplies had to ration ourselves to one each night.

A little rain fell in the afternoon and at night there developed a strong gusty north-easter with heavy rain. The penguins had the time of their lives wallowing about in guano. They spent a long time cleaning themselves in the sea, then went back to the rookery and undid all their good work.

Horrible weather continued during the 2nd. Heavy rain fell nearly all day, and there was more wind which increased in force as the day passed. Great gusts swept across the Island. It was difficult even to walk, and the journey from the hut to the meteorological screen was full of thrills.

Despite the weather, we brought back some seal-meat from a dump at the far corner of the Island in five exciting journeys during which we never knew if our next step would find us still on our feet. The rain had transformed the rocks into miniature skating-rinks. Fortunately we still managed to see the funny side of things, in spite of the fact that we were both soaked through. When tea was over and the wind at its worst,

Lester found that four of the dogs were loose, so we had to attend to them.

The old hut did not leak a drop, but the sail roof of the new or outer hut, as we called it, leaked very badly. We collected two large pannikins of water from two of the drippings.

Lester woke me at midnight by the horrible oaths with which he accompanied his efforts to light a match. It was his turn to take the meteorological observations and, as was our custom, he had been lying in his bunk striking match after match on the beams which formed the bedroom roof.

Snow fell during the greater part of the next day, and a depth of about 8 inches accumulated on the ground. As we were unable to do much outside work, we devoted our efforts to a better solution of the problem of tethering the dogs. By the sacrifice of a leather strap, we made some new collars.

Taking advantage of a fine spell of weather during the morning of the 4th, we carried on with the foundation of the store for seal-meat which we had started a few days before. The store consisted of three patches of large stones, each patch covering an area of about 12 feet by 4 feet, and arranged side by side. On these foundations we proposed to pile the meat and blubber. We placed some bamboo poles at the corners so that we should be able to see the position of the dump when it was covered by snow.

After tea we cut up a male seal which we had killed in the morning. By this time we had reduced the business of cutting up and transport to such an art that, although

the seal was a large specimen, we had finished him within an hour. It was a cold job at this time of the year, and every now and then it was necessary to warm one's hands by placing them in the entrails of the animal—an unpleasant but effective method.

Next day we were busy sorting seal-meat and blubber. The blubber we cut up into pieces about 10 inches square, a suitable size for burning on the stove, and placed them on one of the stone floors. The meat was sorted out into haunches; ribs; heads, livers and hearts; plain meat; flippers and half haunches; necks and 'Gladstone Bags'. The last named was really part of the back which we found could be carried in one hand like a bag by making a slit in the meat.

The 6th was a fine, sunny, cold day. We had intended to carry coal over from South Island, but about ten o'clock saw a female seal high up on the ground close to where the coal lay. Thinking that it would be a quick and easy job to kill this lady, we picked up weapons and marched over to deal with her. Lester fired a shot and wounded her. The next shot misfired and for several minutes the seal rushed about, while I followed brandishing the axe and waiting for a chance to aim a blow. All over the place we went, and then the animal headed for the sea; then she came on land again, then back to the shore and in among the blocks of ice in the water. I pursued and eventually killed her when she wedged herself between two blocks of ice. We spent a few minutes wondering how we could possibly reach her to cut her up. The block and tackle seemed the only means, so we cleared the snow from the rope and brought it over. We fixed

the block to a suitable rock and then attached the hook to a rope which we passed through an incision in the hind-quarters and round the back flippers. Thus we were able to haul the large seal up an incline of 50° and a distance of 25 feet to a spot where it was possible to cut her up. It took us until one o'clock before we had done this and carried in the meat and blubber.

In these little difficulties Lester's nautical training always stood us in good stead. In fact, next to using a palm and needle, I should think he was most happy when involved in the intricacies of blocks and tackle. With such things I was rather helpless, but given adequate materials nothing daunted Lester.

On the morning of the 7th we started removing the coal from South Island to the hut. We had hoped to move it sack by sack, but the shafts of the hand-barrow would not stand the weight. After various experiments and an interruption at lunch-time to kill a male seal, we found that the only way was to make a number of journeys. The method we employed was to take two barrow-loads of loose coal from the sack and then bring the rest in the sack itself. The loose coal was piled against the east wall of the outer hut where the hole was that gave access from the inside of the hut; then the sacks were piled in a semicircle round the loose coal, protecting it a little. We only managed to fetch in seven bags that day. It took us another hard day's work before we finished. By working all day we managed to bring over twenty-four sacks. Each sack meant three journeys over a switch-back path. Two places had to be negotiated by sliding down them and at another there was a dangerous

passage up a slippery slope; the bad condition of the ground made the work many times harder. The sacks were also frozen hard and cemented together and were difficult to separate. All told, we had fifty sacks of coal when we first landed.

There was bad weather on the 9th, with the temperature above freezing-point. The barometer fell rapidly and it rained nearly all day. We had to take off the sail which formed the roof of the outer hut from the bamboo poles as it needed to be thoroughly oiled and also nailed down in a better way. At the time it was leaking like a sieve and was practically useless. Water had collected and frozen in the pockets formed between the crossings of the poles, and I had to stand underneath holding a primus stove while Lester, who was on top, took out the half-melted ice. We were both soaked, Lester by the continuous fine rain, I by a deluge of large drops, some of which traversed, by way of my neck, nearly the entire length of my body. After stripping off the sail, feeling decidedly wet and uncomfortable, we ceased work and went below. We had to sit in one position to obtain any degree of ease, as our elbows, knees and the backs of our legs just above the tops of our sea-boots were sodden.

In the middle of the afternoon there was not quite so much rain falling, so we set to work again to replace the sail-cloth. While Lester collected firewood, I tried out a pot-and-a-half of seal oil for dressing the roof of the outer hut. This, as a matter of fact, was nearly the cause of disaster. I left the primus burning in the kitchen for a moment to fetch some more blubber, and when I

returned found that an eiderdown, which had been left to dry in the loft, had fallen upon the stove and would have been alight in a few moments. Luck, however, seemed to be with us on this trip.

On the 11th, as anticipated, the south-west wind arrived with a vengeance—a veritable gale, but, thank goodness, there was no snow. As the Bay was nearly clear of ice, we could devote our attentions to the life-boat with a view to hauling it high and dry on shore. Unfortunately the first high tide was lost because the sledge-boat, which had to be used to reach the life-boat mooring, fouled some ice. While there was a lull in the wind we rowed to the life-boat and, after clearing her of ice and water, rowed her round to the spot we had chosen near the north-east corner of the Island and left her there to await the afternoon high tide. This was in at about 4 o'clock and two hours later we succeeded, by the expenditure of much effort, in dragging the boat a little way up on shore. As she was 20½ feet long and had a beam of 6½ feet the task was as much as we could manage.

All next day we worked hard in falling snow and sleet, and by the help of the double luff-tackle and a small extra block managed to haul the boat up high and dry.

The weather was too bad for work outside on the 13th, but on the 14th there was a great improvement. The wind had gradually fallen and the sun shone. Nearly all day we were dealing with the life-boat, which we finally turned over and secured with three guy wires. This last part of the job was not made any easier by

a wire breaking, causing it to jump backwards about six feet and throwing it out of line.

Our suppers at this time consisted alternately of minced seal-meat and boiled penguin-breast. Lester cooked the penguin on his duty-night and I the mince on mine. Not much variety! I vowed that when I returned home mince should never appear on my menu, and up to the time of writing this book it never has. The memory of our minces is still more than enough to satisfy my appetite.

We had thought of bringing back some old blubber from a depot made during our early days at Water-Boat Point, but when we excavated it from the snow, the smell and sight made us feel so sick that we decided to let it lie in peace. On one piece of meat were circular patches of white fungus about 2 inches wide, with delicate white foliage.

Both 15 and 16 April were days of bad weather, with snow, sleet, hail and wind, so we did not work much outside. During a lull we made a sledge-boat journey to Coal Point and fetched a sack of coal wrongly dumped there when we had first arrived. Poor Lester fell over in the boat, bit his tongue, and received a blow on the chin from his oar.

The 18th was my birthday, my twentieth, and what a day to be remembered! Blowing a gale, rain falling nearly all the time, and a thaw. In honour of the occasion I produced a Christmas pudding, brought from England, which we ate piece by piece during the next few days, making each mouthful last as long as possible and smacking our lips at the delight of eating something really

palatable. After seal- and penguin-meat the pudding tasted as good to us as dinner at the Criterion. We indulged in a cigar each after supper.

Bad weather continued, but we managed to kill and flense two more seals. These had come up on shore near the hut and we could not resist dealing with them. It was impossible, owing to the darkness, to work outside after 4 p.m.

Although on the 22nd it had been snowing and blowing up to tea-time, after supper we were surprised and delighted to find a fine moonlit night. We could see quite a long way around; the shadow effects on the glaciers and mountains were wonderful. There was almost complete silence. The hard, crisp snow made walking a pleasure and the air felt quite warm. Our shadows were so distinct that they might have been thrown by the sun and not by the moon. We thought less bitterly of the unkind days just left behind.

As all the outside work was completed ready for the winter, we felt that we could devote time to improving the distinctly primitive conditions which existed inside the hut. The first thing we did was to clear out the outer hut, and, as it was then reasonably water-tight, to cover the floor first with a layer of gravel from the shore and then a pavement of flat stones. Improvements were also made to the dog-tethers so that we could work without continued interruption from breakaways and the consequent yelping from all the other dogs. One of the Venesta cases was converted into a tool chest. We were most careful over every nail, however badly bent. With the exception of a few 6-inch nails given to us by the

whalers, most of the hut and furnishings had been constructed from nails salved from packing-cases. We were somewhat restricted in the way of tools; a saw, two geological hammers, a chisel, and some pocket-knives were about all we had.

On the 27th we had another sample of bad weather. The day started calm and dull and ominous. Gradually the wind worked up and great gusts blew, accompanied by snow and much drifting. My feet had been badly attacked by chilblains. To walk in the open in this weather was most unpleasant; the wind nearly knocked us over and we could not see or even think owing to the bewildering and blinding snow-drift.

It was better on the 29th, which was a fine, sunny day, but by that time the only power the sun possessed was of keeping us cheerful.

We hauled the sledge-boat from the shore to the side of the hut where the coal-heap was, and after chipping out as much ice as possible, turned it over on its side and stowed in it the tins of kerosene and methylated spirit. It was lucky that we had finished the outside jobs, as it was very easy to lose things in the snow. There had been a permanent coating of snow on the ground for some time past and the lower temperatures made further thaws unlikely. The Bay was filled with a loosely cemented mass of new ice and drift-ice, but the new ice was as yet too slushy to be walked on. I noted in my diary for 3 May that 'although temperatures are now lower, we have not felt half so cold as on many days when the temperature has been above freezing and the atmosphere damp. The dryness of the air plays a very

important part in the effect of the weather on us. Snow lies hard and crisp on the ground. Patches of thin new ice float in the channel opposite and to the south of us.'

A whole day was spent in sorting rubbish and stowing away the supply of straw, paper and so on; all of this was valuable to us, not only for fire-lighting, but also for packing scientific specimens. It was a chilly job, for the paper was frozen as tightly together as if it had been glued. We also had to inspect our food-store. It was a sad thing to find that nearly two-thirds of one of the two cases of ship's-biscuits was spoiled by damp. Some handfuls of brown fungus-covered muck could scarcely be recognized as biscuit. The second case luckily proved to be nearly free from this trouble. After sorting and re-packing we found that we had enough for about two biscuits each per day, provided we were relieved when we expected to be. This was sufficient allowance for us and rather important, as the best meal of the day—ship's-biscuit and pemmican for breakfast—would have been spoiled had there not been enough. The sweeter sledging-biscuits were not at all pleasant to eat with pemmican. It was fortunate that we no longer had to share between four.

The first days of May were fine, sunny and cold, and only a little snow fell. Then the weather changed. We had an awful day on the 9th when the temperature stood between 10·0° F. and 4·0° F.; the wind blew in enormous gusts and rained very sudden sledge-hammer blows against the walls of the hut. Fortunately the strength of the gusts lessened towards evening. The roof of the outer hut caused us anxiety as it flapped up and down in a most

alarming manner which fairly took our breath away. To keep down the canvas sail we placed a case of pemmican on it where it overlapped the roof and also tied a weight near the middle.

After breakfast we had to see to the dogs, and our hands were nearly frozen with the intense cold and drifting snow. We must have looked the picture of abject misery as we tried to find some warm part of our person against which to ease our numbed fingers. As our thick clothes were wet and we had not sufficient fire to dry them, we were temporarily reduced to wearing ordinary trousers and thin jerseys. So far we had been unable to discover amongst our diversity of stores a new and more adequate rig-out of jersey and corduroy trousers although we knew they were packed somewhere. Our own were not only wet, but were covered in blubber and seal blood.

Directly the stove went out, as it frequently did, the hut was like a refrigerator. Unfortunately we could not afford to use the primus heater too often for our supplies of kerosene were far from ample. In the few minutes during which we were feeding the dogs, one of my fingers received its first frost-bite. I did not notice anything wrong with it until I realized that it was the only finger that was not painful. I could feel no sensation in it at all until it began to thaw out and then it revealed its existence with a vengeance. My diary best expresses our other discomforts: 'Everything freezes. Tonight my ink-pot has frozen up and the mince froze as we were eating it. We sit and shiver and try to laugh at our discomforts; it's not much use to moan and groan.'

The alarum clock disliked the cold weather. It only

worked from 7 a.m. to 1 p.m. At other times, despite shakings, exhortations and cursings, it refused to function. Our ordinary leather boots were frozen stiff each morning and getting into boots which felt like cast-iron, was, for me, a painful ordeal, owing to chilblains. As a relief we changed to felt-topped boots, which were certainly better. In spite of our miseries we usually found something to chaff each other about. One day Lester produced at supper a wonderful 'raisin-refiner', its purpose ostensibly being to sift out inedible rubbish from the raisins. It consisted of a wooden frame with nails tacked in at even distances all round and interlaced with strands of cotton. I roared with laughter at it, but he coldly remarked that people with inventive genius were always ridiculed. It was a complicated business; he would place his handful of raisins in the sieve, shake it about and then eat not only what was left in it but also what had fallen through. After that he had to spend some time picking out the odd raisins that had become entangled in the meshes. I maintained that it was easier to pick out obvious 'brick-bats' and other sweepings of the warehouse and chance to luck, but Lester insisted on employing his apparatus.

One evening Lester melted some ice to make tea for supper. For our water-supply we usually knocked off lumps from any block of ice on the shore and until this occasion had been lucky. The first gulp proved that the tea was more suitable for an aperitive than a beverage; Lester had chosen a block of sea ice. Saline tea is abominable!

Slowly but surely the hut was straightened up and, as

the temperature inside the water-boat was well below freezing all the time, we looked forward to moving our living-quarters from the inside of the boat to the hut proper. For protection against adverse winds we filled up and closed the cases which formed the east wall and battened them together. This part of the hut was built on top of the boat and we intended to use it as a sitting-room or lounge. We re-nailed the eiderdowns over the walls and under the roof. The roof part was quite a performance; Lester nailed while I held a candle and, needless to say, he hit his fingers a good many times and I burnt mine nearly as often. We had no windows and were absolutely dependent on artificial light inside the hut. The driving snow had soon made apparent any cracks in the walls and these we stuffed with sennegrass. We paved the floor of the kitchen with pemmican cases, which made it drier to walk on.

Carpentry was a strenuous occupation; it was carried out by candle-light, with very limited equipment, wet wood, and nails of every shape other than straight. We had already used up most of the nails which were not beyond straightening, but we did, nevertheless, achieve some praiseworthy work. For instance, we made a fine step-ladder leading from the kitchen to the boat-deck. It had, I admit, only two steps, and the sides were made by splitting a piece of a wooden spar. We also rigged up the shelf above the stove again with bamboos to hold pannikins.

Among smaller items we made an excellent shovel out of a kerosene tin with a piece of wood for a handle, and a poker from a piece of a blubber drag-iron. By an

oversight we were not equipped with candlesticks, so we remedied this omission by making some, with the aid of a pair of scissors, from cigarette tins. I also constructed a machine for breaking up pemmican into small lumps. Up to that time we had, with imminent danger, broken up the hard pemmican by stabbing it with the point of a knife. My apparatus was constructed like a print-trimmer such as is used by photographers, but with a wooden platform on both sides of the knife. It worked very well and the bits of pemmican no longer flew in all directions. It was rather difficult to make a hole in a steel knife so that it could form the cutter; all I had to pierce it with was a blunt chisel.

From an old biscuit tin we constructed a small oven. The tin lay on its side and the lid was converted into a door which we hinged at the top. Wires were stretched across inside the tin at a height of an inch or so from the bottom to form a platform for cooking-vessels. The oven was fixed to a circular piece of tin with a square hole in it; this kept the bottom from direct contact with the stove. We hoped that the oven would work satisfactorily, as we should have liked to extend the variety of our meals as far as stores would allow, but it was never a great success. So far we had lived mainly on pemmican, seal, penguin, biscuits and tea, and we were heartily sick of penguin and seal.

Supper still consisted of minced seal-meat on my nights as cook, and 'penguin à la ordinaire' (i.e. plain boiled penguin-breast) or more often 'penguin à la pemmican' (penguin-meat in small chunks boiled with pemmican and pieces of ship's-biscuit) on Lester's

nights. The last dish was the most popular, for it disguised the flavour of the penguin-meat. We made it a duty to eat as much fresh meat as possible to avoid any possibility of scurvy, and we were fairly content with the simple fare although we did miss fresh fruit. We should not, of course, have turned up our noses at a good meal of beef and Yorkshire pudding!

In readiness for a future change in diet we stowed away in an accessible place the solitary sack of flour, adding, in doing so, a coating of fine white powder to the veneer of seal oil, blood, smoke, penguin guano, reindeer-hair and candle-grease with which we were already covered.

By the middle of May we were feeling the cold more and I recorded in my diary for May 14th that: 'Each morning we shiver as we eat our breakfast. One of us carefully lights the stove, then thrusts half-frozen hands into his pockets, and we both wait for warmth. After an hour or so we begin to feel fairly comfortable. We even manage to develop quite a reasonable temperature inside our sleeping-bags when once we have thawed them out. They are frozen stiff at night and the hairs inside mine are tipped with beads of ice where my breath has frozen on them. There is a large quantity of hoar-frost on the bedroom roof above the bunks.' As the sun disappeared about 1 p.m. we could not expect to be over-warm.

By good fortune we discovered some new wool jumpers and trousers and also unearthed two airmen's suits which were very comfortable and warm. We slept in the woollen combinations worn during the day-time.

To increase the warmth of the hut we paid a little attention to the stove, filling in the space between the stove and the floor with large stones and sand. We then converted a bucket into a 'devil' by boring holes in the sides and bottom, and placed it inside the stove, standing it upon half-a-dozen bricks (the result of a 'scrounge' by Lester during his hurried visit to the *Solstreif*). It proved instantly successful and gave a good heat, was economical and required little attention.

On the 17th we moved from the water-boat into the hut for meals and were pleased with the change, for the boat had been very chilly. The table which had been constructed in the kitchen was narrow, rather like a table in the dining-car of a train. It was attached at one end to the side of the boat. We were apt to bump one another's heads when we leaned forward to pick up our food, so we practised an arrangement whereby we fed in turns in a sort of alternating rhythm.

The rearrangement left more room down in the water-boat so that we could finish off the bedding. First we cleared off all the ice from the ceiling by heating it from below with a primus stove. There was a regular deluge of water for a while, but after a time we got the wood fairly dry. We relaid the sennegrass which formed the foundation of the bed and also filled the spaces between the cross-beams of the floor with the same material. We then placed on the top eight reindeer-skins which we had tacked together and nailed them to the head of the bunk to prevent slipping. Next we spread over two rugs, then a layer of eiderdowns, and finally the sleeping-bags. This made a wonderful bed.

10. *Bagshawe in winter dress*

Uneventful days passed, with variable weather, sometimes quite fine, at other times bad, until the 26th when the temperature during the night suddenly rose from 22·0° F. to 32·5° F. and the barometer fell. In the early hours of the morning the easterly and north-easterly 'steam-rollers' started and continued throughout the day. There were snow-drifts everywhere in long parallel ridges. The glacier presented a weird spectacle as the snow blew off the top. Hail fell in the evening. Blown by the strong wind, snow drifted over the dog-kennels and in some places was 5 feet deep.

The weather was too much for the roof of the outer hut. With the high temperatures outside and the heat from the kitchen fire inside it dripped water all day long; every time we walked through the hut a drop or two found a way down our necks, but we were inured to minor discomforts of this sort. We filled a large aluminium pan with water which dripped through a hole above and used it for washing up. One night about 12 o'clock Lester noticed that the roof was caving in owing to the weight of snow and water on top. We propped it up with boxes and odd pieces of wood as a hurried measure, but were obliged to cut an oar to fix as a permanent central support. We were very loathe to use an oar which we might have needed badly in an emergency, but we had nothing else long enough.

Water continued to drip and we collected several pannikins full; in fact the water-supply was so abundant that Lester had a wash-day. Rain continued to leak through the hut roof for nearly a week.

June 2nd was a fine day, for which we were thankful. We did not actually see the sun, but had to content ourselves with a view of its reflection on the hills and mountains. Fine weather continued until the 5th when there was a light wind and sunshine for about two hours. By about 11 a.m. the sun had nearly cleared the mountain tops, but it just skimmed over them—a dazzling disc of light—and in a short while had disappeared again. Anyhow it was cheering to see, even though it did not warm us much.

We soon had a change; on the 7th came strong gusts of wind from the north-east with much sleet and snow-drifting.

In addition to other work, we had routine jobs each day and ice had to be fetched every other day. We broke the ice from blocks of glacier ice which had drifted into the Bay and had become frozen in when the Bay became covered with sea ice. Care of the dogs took up quite a lot of our time, especially clearing snow from the kennels. The primus stoves needed overhauling periodically but they served us well and required little attention.

Improvements to the door of the outer hut were made by removing a pair of hinges from the gramophone packing-case and using them in place of the seal-skin ones, and to exclude some of the draught we nailed felt and lamp-wick round the edge of the door. Two bolts helped to keep it tightly shut.

The fire refused to burn properly, owing, we thought, to the straight chimney, so we made an elbow out of two tins and connected it between the chimney and the stove. It made a lot of difference.

The felt boots turned out to be almost useless, for the wet saturated them so badly that we suffered a good deal of discomfort from wet and cold feet. If only the weather had kept cold and dry we should have been comfortable, for we could have worn reindeer-skin boots, or to use the correct name, *finnesko*. How erratic the weather was! Between 16 and 18 June there was fine, cold weather; then towards the evening of the 18th came a complete change. The wind, which had been blowing lightly, worked round to the north-east. Drip, drip, drip, went the roof of the outer hut and everything was coated with ice and cemented together. On the 19th it was worse; the evening was terribly gusty, with so much snow drifting and falling steadily at night that it nearly blocked the hut door. The stinging of the snow on our faces as we took the meteorological readings was very painful. The following day we had to dig ourselves out of the hut through a drift which reached as high as the top of the door. Such was a sample of the weather at Water-Boat Point!

Chapter VIII

MIDWINTER

JUNE 21. Midwinter Day, to anyone living in these regions, is of real importance in that there is prospect of better weather ahead and definite promise of more daylight. Midsummer Day, on the other hand, though it has a charm of its own, threatens bad weather to come.

There had been a slight general improvement in the weather and the gusts of wind had been of lower velocity. It remained dull all day and snow fell very slowly from noon onwards.

In salute of the great day, perhaps, a small iceberg which had been aground for two months or more to the west of the hut calved a projecting portion.

Our Midwinter celebrations were on a modest scale; we had marmalade for tea and baked beans, followed by two *crème de menthe* sweets, for supper. We did not hurriedly gulp this supper as we did when there was seal and penguin, but lingered over every mouthful. Every baked bean was dealt with individually so as to obtain the maximum of satisfaction.

Hitherto my scientific work had been severely handicapped by domestic duties, but now we were settled I could devote more time to taking observations. Alterations were therefore made from this day, which was a convenient starting-point. Up to that time meteorological observations had been taken every four hours

during the day; from Midwinter Day onwards they were to be taken every two hours. In addition to a meteorological log, an ice log and a natural history log had always been kept.

Days passed by somewhat monotonously. We read a lot at meal times and especially while supper was being prepared. I had brought down with me a stock of books, which, under normal circumstances, I might never have read at home. I waded through books as diverse as Darwin's *Origin of Species* to light novels, but it was such authors as Dickens and Thackeray whom we most enjoyed and who could carry us, when we were feeling depressed, back to England, good food, and warmth. Many a time we had all the joys of participation in some of the meals described by Dickens.

We managed to keep the temperature in the hut about 52·0° F. when the fire behaved itself, and on occasions even raised it to 60·0° F.

Up to this time we had been extremely lucky as far as accidents or illness were concerned, but unfortunately Lester scratched his eyeball with a fragment of stone. As it became painful I examined it carefully through a magnifying glass, by the light of an electric torch, and bathed it. With a piece of cardboard and some lint an eye-shade was produced. The eye took some little time to get thoroughly well. This was the only real trouble we had of the kind, but it worried me. On some days I could see no improvement, but I had to hide this from Lester, so that he should not be distressed. We should have been powerless if anything had gone seriously wrong.

Our good health was probably due to our very simple diet. We had no real cravings for other foods, except, as I have already mentioned, fresh fruit. We abstained from drinking alcohol, except on rare occasions, as it seemed to us a poor warmth-giver and at the best very temporary in effect, leaving one colder than ever afterwards. Lacking foods containing sugar, we ate abnormal quantities of sweet things. I feel sick at the thought of the amount of sweetened Nestlé's milk which we used to stir into a cup of tea.

Our constitutions could be easily disturbed by the smallest deviation from a simple diet. One day we had a 'blow-out', with a menu of:

Soup	Bovril.
Special	Plate of baked beans.
Sweets	Sledging-biscuits.
Wines	Mug of hot brandy, water and sugar.
Liqueurs	Two *crème de menthe* sweets.

All night long and the following day we were indisposed.

Occasionally we had to bring large blocks of ice from the Bay on the sledge to a depot near the hut so that we had enough to last for a time.

The excavation of meat from the dumps and ice boxes was hard work. A shovel, pick, hammer, chisel, and an axe were usually required. The pieces of meat adhered so firmly that drastic measures were needed to separate them.

On 4 July I recorded in my diary that:

The day began fine and the sky was almost clear, but gradually clouds rolled up from the south. In the early

afternoon we saw some beautiful colour effects. The sky was a fiery red, tufted here and there with tongues of flame. The cold statuesque beauty of the white marble landscape was broken in places by patches of dark stone. Only the mountain-tops to the north-east round Andvord Bay rebelled against the chilly whiteness, and tinged themselves with a flush of rosy orange. These lovely scenes fill me with pleasure but I have not the words to describe them as I should like to.

A contrast; on 6 July I recorded that:

I experienced a new sensation early this morning. Drops of water fell into my eye as I lay in my sleeping-bag. They were produced by the melting of the hoar-frost on the bedroom ceiling, but when I was fully awake I could ward them off as they formed by gently urging them farther along the beams.

The fire caught alight at the first attempt, something akin to a miracle. From bitter experience we know that its three periods of maximum brightness are (1) when it is first lit; (2) before it goes out; (3) before it dies down at bed-time. During the day-time, a prayer that it will keep alight is necessary with every shovelful of fresh fuel.

What an everlasting worry that fire was! Scarcely a day passed without trouble from it. Admittedly the paper with which we lit it was rather miscellaneous and occasionally damp, but we always used carefully dried wood and usually added one or two candle-stumps. It gave a fine example of its devilish habits on 9 July, though perhaps the adjective is ill-chosen because a good 'devil' burns well. The temperature was down to between 13·0° F. and 12·0° F. I wrote:

The best part of the day has been spent in endeavouring to light the fire; we succeeded after six attempts which began at 8 a.m. and ended at 2 p.m. Each time it goes out the

bucket has to be taken out, emptied, and re-laid. We had tried a new method of arranging the bricks supporting the bucket, with a view to stopping the smoke which issues in volumes from the front of the stove, and also to facilitate the removal of the bucket, but evidently the fire is a reactionary, for it refused to perform its duty until the bricks had been replaced in their original position. It is difficult to believe that an alteration of three-quarters of an inch in the level, the result of placing the bricks on edge instead of flat, could make so much difference. One of the chief troubles with the fire is the slatey coal, and until it is well alight we are smoked out. Time and again the smoke drives us, with streaming eyes, into the open, but this is preferable to no fire at all.

It seems as though I am always moaning about the fire, but it really is a great trial. The handling of iron objects with one's bare fingers is very painful, especially now that the temperature is so low; our finger-tips are horny from handling cold metal, and the fire-lighter has frequently to give up his efforts until he can thaw his fingers into sensibility against his warm body.

Great things happened on the 8th and 9th. On the former day I had a bath, the first since I left the ship. The bath itself consisted of one of the outer vessels of the aluminium cooker. By much coaxing of the fire I raised a comfortable heat inside the hut. On the 9th Lester had his. It was a change to look (and feel) fairly clean.

The temperature in the kitchen one night was up to 62·0° F. but in our bunks it was 26·0° F. It felt like going into cold storage as we climbed down the hatchway to go to bed, but once in the fur sleeping-bags we were soon warm.

From 13 July onwards we took turns to see to the

meteorological observations. I had taken them hitherto, but we had now settled down properly and could devote a lot more time to scientific work. Taking observations was enjoyable enough in agreeable weather, but in bad weather it could be very unpleasant. We also started to lead a more civilized life. We used a linen table-cloth of sorts for meals, and some flannel material, intended for the repair of trousers, served for a cover between meals. Our daily routine was: between 7 and 8 a.m. the cook rose, lit (or tried to light) the fire, took the meteorological observations[1] and, if the fire had decided to burn, we had breakfast sometime after 8 a.m. If, as was frequent, the fire played up with us, breakfast was delayed, but we usually had it before noon. While the cook prepared breakfast (pemmican, biscuits, tea, sledging-biscuits and perhaps jam), the other swept up and chipped the ice from the outer hut floor. Breakfast finished, the cook washed up the pots, any surplus hot pemmican being taken out to the dogs. The washing-up pot, which fitted into a hole in the top of the stove, was emptied and replenished with water from the large pots on the shelf above. After 2 p.m. we fed the dogs, and brought in ice if needed. Then we had tea. After tea (we took turns in preparing meals), the cook for the meal did the usual washing-up. At 8 o'clock the breakfast cook took observations at the meteorological screen, and then prepared supper. After supper any surplus hot food was again taken out to the dogs. In the afternoon the cook for the following day's breakfast took care to put

[1] Later we changed the arrangement and the one who was not cook took the 8 a.m. and 8 p.m. observations.

some wood in front of the fire to dry, ready for the morrow.

On Saturdays we had our usual house-cleaning. While one of us cleared out the lounge and the kitchen, the other swept up hairs in the bunks and straightened the eiderdowns and bedding. Hairs from the sleeping-bags were everywhere; when we got out of bed in the mornings we could usually find a small ball of them down our necks. We also cleaned up the outer hut, sometimes removing as much as a barrow load of ice and snow from the floor. When the temperature rose, the drippings from the roof formed stalagmites of ice all over the floor.

During the night of the 16th a gale blew, from the south-west by the appearance of the snow-drifts. We awoke to find patches of snow in the outer hut. A spade which stood outside by the door had been blown 10 feet away, a meat-cutting board had been blown round the corner of the hut, and a kerosene tin, which we used as a bucket, lay about 150 feet from the hut. The latter had been blown from its hook by the door, round the corner and into the Bay. A playful little breeze!

The sun could be seen for exactly 2 hours, from 10 a.m. when it appeared above the hills, until noon, when it disappeared again.

Owing to the variations in temperature, we had more trouble with our boots. One day my long felt boots had frozen so stiff that I could not get my feet into them properly and had to make my first journey to the screen with my toes where my ankles should have been. By the vigorous application of the hammer and some physical contortions I managed to pull them on later

in the day. On this day (the 17th) the temperature fell to 6·0° F. after rising to 33·0° F. the previous night.

On 21 July the temperature readings provided a little interest. The temperature at the screen at 8 a.m. was found to be −0·5° F. and the minimum thermometer registered −1·0° F. Gradually, with a change of wind to the north-east, it rose.

To make matters unpleasant the fire, which had started with a great flourish, went out, despite all coaxing, in the middle of breakfast. We tried to light it again after breakfast, but before we could fill the fire-bucket (we did this in the outer hut) our feet were so numb that we were forced to go into the kitchen and don *finnesko* for a few minutes, meanwhile making uncomplimentary remarks about the coal and fire. A little before noon we had the fire going, but it got its own back by trying to suffocate us in the evening.

For supper, Lester made soup with dried vegetables and soup powder, carrying out his experiments with the help of an array of mugs, pots and pans and many consultations about weights and measures. We usually found ourselves short of one or two ingredients whenever we contemplated making delicacies. But a delicious supper was spoiled by an unpleasant attack of sickness and headaches. This must have been due to lack of ventilation, because we felt much better when a lull in the weather occurred and we were able to open the front door. No doubt the fire had created bad gases or had used up most of the oxygen inside the hut. We realized that we should have to devise some means of providing better ventilation.

On another occasion we made a pudding from flour and raisins, and used seal oil in the place of suet. It turned out very well, but was rather heavy and we were bowled over after eating a slice. We were not used to delicacies such as this and almost invariably felt ill after eating them.

25 July was the first really fine day we had had for weeks. The sun shone before 10 a.m. and disappeared a little after noon. The sky was almost cloudless and the air cold and crisp. The temperature varied between $-1{\cdot}5°$ F. and $-2{\cdot}8°$ F. In the bedroom the thermometer registered $20{\cdot}0°$ F. so it was not uncomfortably warm. I walked about the islands for three hours or so to make natural history observations. I watched several small and medium-sized Fin Whales swimming up and down the Channel. Shags were fishing here and there in the water.

On going to bed we found the temperature in the bedroom down to $16{\cdot}0°$ F. and shivered as we looked at the thermometer until we had snuggled down comfortably in our sleeping-bags.

Low temperatures prevailed again on the 26th, the thermometer at the screen registering $-7{\cdot}2°$ F. at one time. In the early afternoon I saw a very pretty scene. To the north lay a belt of frost-smoke over the open water. It was tinged a reddish colour by the sun, and a belt of low clouds just above it gave it the appearance of a smoky fire. There was an almost continuous sheet of new ice around, the result of lower temperatures; it was covered with 'ice flowers' consisting of groups of beautiful fern-like crystals. Shags were fishing in pools of open water.

We walked over to Coal Point after tea, the first time for months, as we had not been sure of the ice before. Our feet were cold at first, but walking soon mended that. On such days as these our moustaches were beaded with ice where our warm breath condensed and froze on the hairs.

What a contrast there was on the 27th. On the previous evening a minimum temperature of −7·7° F. was recorded, but on that day it was up to 28·0° F. The whalers called this place Paradise Bay—why, goodness only knows! Perhaps it was meant in sarcasm.

The varying temperatures had their effect on the meat stock on the dumps in spite of the waist-deep covering of hard snow. To say that the meat smelt is to put it mildly. The first pile was particularly bad; the second, being of later date, was a little more wholesome. The penguin breasts had become decidedly 'niffy' and strong-tasting, and though we tried to swallow the chunks of meat as one does medicine we had to give it up. We therefore had a double ration of seal-meat every other night, until the penguins returned to supply us with fresh meat and, later on, eggs.

Further experiments were made in cooking. Lester was particularly keen on this sort of thing and was always planning culinary surprises, in spite of a limited pantry. We had one grievous disappointment. We possessed a tin labelled 'Custard Powder' and had been saving it. Whenever we noticed it we licked our lips; we read the directions for use dozens of times and had many conferences on what we should make with it. When, with great ceremony, it was finally opened, we

found that it contained ground celery seeds. Oh, fate! The only thing to be done was to use it for flavouring soup. Lester unfortunately miscalculated the strength and put in about four times too much, making the soup so bitter that we could scarcely drink it.

Once or twice we had rice-pudding, made with Nestlé's milk, for tea. We also made one or two more 'spotted dicks' with raisins, flour and seal oil. These puddings lasted well, for they were so solid that a slice was as much as we could risk without acute indigestion.

With the deep snow and strong winds thick snow-drifts accumulated round the hill where the meteorological screen was and consequently a considerable detour was necessary to avoid them. We gave each other cold comfort on bad-weather days by forecasting colossal gusts of wind just at the time when the other was due to go up to the screen; the sheer contrast of comfort seemed to make each of us amused at the other's discomfort in the blinding snow-storms outside. Snow forced its way into the outer hut and it was difficult to throw it out, for whenever we opened the door gusts of wind blew most of it back in our faces. It was a blustering, painful business to struggle through the door; directly we put our heads out we were half dazed. The string catch was difficult to manipulate and in the process face and eyes were smothered with snow. Moreover there was salt in a lot of the drift, and it made our eyes smart and water. Once clear of the door, life was comparatively peaceful, unless one fell into a snow-covered dog-hole on the way up to the screen. The hut door usually refused to close on our return, so once again there would be the

painful ordeal of a shower-bath of snow. The storms from the north-east were the curse of our lives and unfortunately they came so often. One day would be respectably warm, the next bitingly cold.

Every day one of us did a few minutes coal-mining with a geological hammer. The coal-heap was frozen hard and we had to excavate a cave in the middle of it in search of lumps. The entrance was through a hole in the outer hut wall. The cave eventually became so big that it was possible to crawl right inside and grope around for knobs by the light of a candle. There was a great deal of slack amongst the coal, so knobby pieces took quite a lot of finding. If we were fortunate enough to find more than sufficient for immediate requirements, we were dishonest enough to try and hide the surplus in a corner out of sight of the searching eye of the other.

We got up on the 31st expecting in the normal course of events a slushy day like the preceding one, but disillusionment came when I tried to pull my boots on and found them like sheet-iron. At the screen I found the thermometer registering $-5{\cdot}0°$ F. while the highest temperature during the night had been $29{\cdot}0°$ F., a difference of 34 degrees. At 4 p.m. the temperature fell to $-10{\cdot}4°$ F.!

Feeling cold after taking observations I arrived back at the hut eager to warm myself, but Lester had failed to persuade the fire to light. I tried and started it, but after breakfast it went out again. A third attempt to light it later on was successful. By the time we had finished work outside, circulation began to return to our

feet. It was wretchedly cold back inside the hut; if we shut the door completely we were stifled by fumes, if we left it open we were nearly frozen.

At 8 p.m. we had some more low temperatures. Unfortunately, as fate would have it, it was my turn to take observations. All went well till I tried to replace the maximum and minimum thermometers, but somehow I could not manage it and was numbed with cold when I used my bare fingers. Then the swing thermometer absolutely refused to go back on its hook for some time until after various efforts, with and without gloves, I succeeded in hanging it up. My reward was a little finger frost-bitten and two others well on the way. The temperature would not have affected me so much had a breeze not been blowing from the south-west. At 9.30 p.m. the temperature was down to −13·0° F.

Chapter IX

TRIALS, TRIBULATIONS AND COMMONPLACES

August started with a flourish. At 8 o'clock the thermometer registered −15·0° F. and the minimum thermometer showed that during the night the temperature had fallen as low as −16·0° F. We felt cold inside the hut so we lit the heating primus for a little while. We did not enjoy this luxury very often for we could not afford to be extravagant with kerosene. Felt boots were discarded and Lester used a pair of fur-lined boots with rubber soles, whilst I wore *finnesko* and puttees.

We found the sleeping-bags a little cool during the night. Lester had a good deal of ice in his, the product of frozen breath, so he spent an evening thawing it out. My bag was in a better state, but trouble lurked ahead for I knew that the accumulation of hoar-frost on the roof over my bag would melt one day, probably when I least expected it.

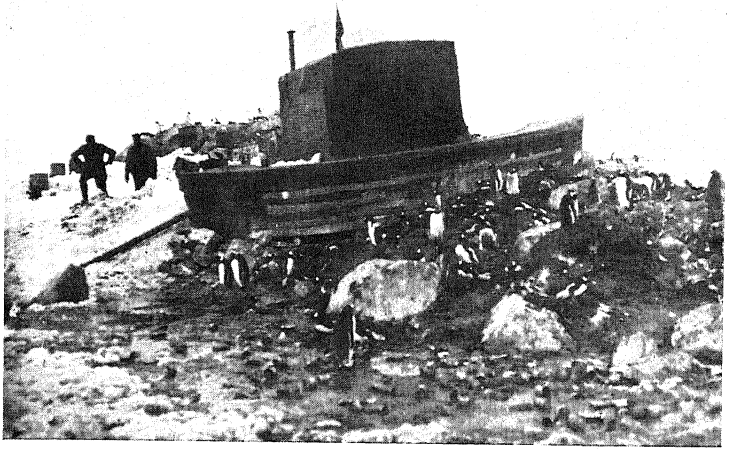
As King, one of the dogs, had been looking ill and miserable we established him in the outer hut with Florrie who was already living there. Florrie had an insatiable appetite and would eat anything she could reach. She caused us a lot of worry and trouble. Since the beginning of March we had been treasuring a small piece of cheese for a future feast and had wrapped it in muslin. One day we discovered that she had eaten the

lot, including the muslin. Another time she managed to knock one of our few pots of jam from its shelf, and devoured the string and paper top in addition to the contents. She was also partial to pieces of coal.

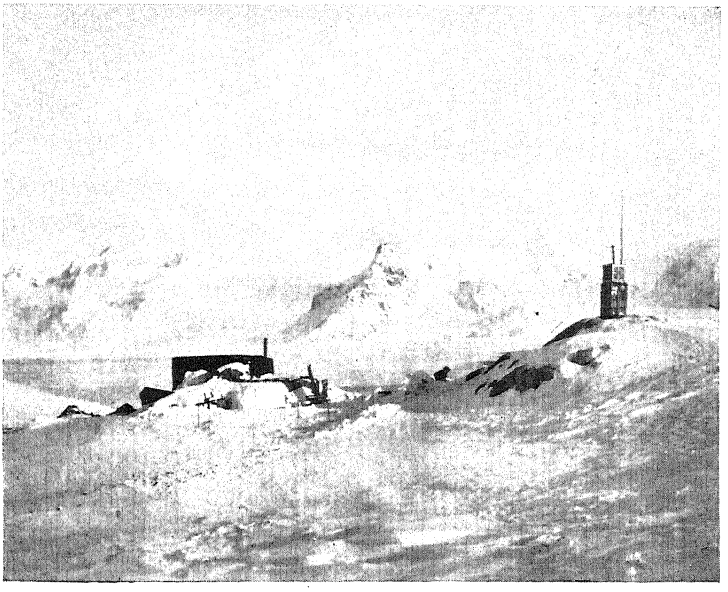
We were able to vary our walks a little by going out on to the sea ice at the foot of the Glacier. We first tested it on 3 August and progressed safely until my foot went through into the water. The sea ice tended to be slushy below the layer of snow and was not really safe to walk on, but we were glad of a change as our tramps from one end of the Island to the other had become monotonous. Snow-shoes were useful and diminished the danger to some extent. We found them preferable to ski.

On the 8th there was bad weather as usual and a strong wind. We fed the dogs; and afterwards, as we wanted some ice from the dump, we dug and probed, but could find none. We thought there was plenty, but the snow-drifts had covered everything so thickly that we only managed to collect a few fragments and had to make up the rest with lumps of hard snow. Thoroughly uncomfortable, we returned to the hut which we found sprinkled inside with snow, blown in through the slightly-open door which could not be fastened very securely from the outside. When we took off our outer garments we found that the snow had made its way inside our suits, into our pockets, and down our necks.

We toiled for four hours next day because of the snow-drifts. Ice had to be removed from the outer hut and snow from outside the door; all the dog-boxes were



11. *The hut in December*



12. *The hut and Life-boat Bay in August*

buried. Although I dug in the snow for an hour I could find no trace of the ice-dump, so we concluded that it was exhausted and fetched more ice from the Bay.

After tea, I mended my dog-skin mittens; I also darned my socks, through which my feet were beginning to appear, and plucked up enough courage to repair my shirt. It must have been a few months since first I put the latter on; then it was a white flannel tennis shirt, but it was a dark khaki wreck that I took off. The right sleeve provoked a sigh whenever I looked at it. To say that it was torn is an extreme understatement; it must have been held together by dirt. The shirt was almost beyond repair, and would soon have to be discarded for a new one. Under our flying-suits we wore, as well as a shirt, combinations and vest, but we never bothered much about our underclothes unless they fell to pieces. We slept in them and rarely took them off. Lester changed his for a fresh set when he had his bath some weeks ago, but I had not the pluck to change anything except my vest which was absolutely done in. New clothes looked so cold! My last change took place in the late summer when we were coal-heaving.

The 12th was a fine, cold day, with a light southerly wind. I recorded in my diary that: 'Yesterday and today for the first time for a long while we have felt the warmth of the sun.' The new ice lay to the south and south-west as far as we could see and up the Channel from the north point of our island west to Lemaire Island.

There was sadness for us on the 16th. When I went to the screen before breakfast I found poor old Swift, one

of our dogs, stretched out dead on the snow. His tongue was frozen and hanging from his mouth. How he died was a mystery. Dodger had broken loose and as the hair round Swift's throat was bunched up, the two dogs may have had a fight in which Dodger throttled Swift. Swift's death was a blow to us, as he was our favourite. He always had a grin for us and was full of delight whenever we took him out with us. The snow-drift was too deep for us to bury him near Peggy, so we wrapped him in a sack and buried him for the time being on the glacier slope.

This tragedy brought the thought of death very close to us. We did not speak about it, but the realization of how much we depended upon each other was foremost in our minds. It would have been terrible for the other if one of us had died. The thought of being left in the Antarctic alone, wondering whether rescuers would ever come was a nightmare on which we dared not dwell. If the choice had come, I would unhesitatingly have chosen the lot of the one doomed to die; I could not have faced the ghastly loneliness of being left behind.

We managed to kill a shag, and fried the breast and liver with dried vegetables for supper. They made a good meal. I combined scientific observations with the exercise of my post as butcher, invariably examining the contents of the stomach and taking measurements.

Between noon and 4 p.m. there was a slight swell in the Channel. This was remarkable, for it was rare for the sea in this part even to be choppy. The waves broke away much of the ice-foot round the north shores of the Bay and decreased the extent of the new ice-sheet.

In spite of poor weather, we were able to secure a few photographs from time to time. It was chilly work manipulating the various gadgets of the camera in a cold wind. It was not uncommon, after much fumbling, to take a photograph and then discover that we had forgotten to wind on the film from the last exposure; our language on such occasions was vivid and descriptive.

The 21st was fine but cold. In the afternoon I donned my Balaclava helmet and snow-shoes and carrying an ice-pick, tape and note-book spent the afternoon examining and sketching the ice-foot and other ice formations. I found some three or four hundred Gentoo Penguins at Coal Point.

There was vile weather on the following day with snow falling most of the time and a fairly strong wind, but I managed to spend a couple of hours outside to continue my study of ice formations. Life inside the hut was decidedly tedious in bad weather and even out-of-doors we had very limited space in which to take exercise. On three sides of Water-Boat Point lay the sea, on the fourth a crevassed glacier. Our kingdom was an uninhabited continent, yet with all its five and a half million square miles we could walk only a few hundred yards!

Taking advantage of a fine day on the 23rd when the sun shone nearly continuously until 2.30 p.m., we surveyed part of the glacier face to the south of us. The ice appeared fairly safe near the shore, at any rate while we were on snow-shoes. The glacier face varied from 78 feet to 133 feet in height, a sheer wall of ice.

On the morning of the 24th we loaded up the small sledge with instruments, Burberrys and food, and made

off southwards following the edge of the glacier. The slushy condition of the surface of the sea ice made the going fairly hard at times. We stopped once or twice on the way to collect geological specimens and take photographs. Time pressed, and at half-past three, after having had some tea, we turned back. We had been some 6 miles along the coast. The return journey was hurried because of approaching dusk. By 7 o'clock we were home; but dusk overtook us on the way and we had to rely for direction on the marks we had made when we came out, even depending upon matches to find our tracks during the last stretch. It was not much of a journey, but it was about as much as we could attempt. Our dogs were unsuitable for any useful sledge-work. We could have risked a longer journey on foot and would probably have managed fairly well, but the sea ice round the coast was unreliable, and where three might take a risk, we did not feel justified. We felt our limitations very keenly, for we knew that with a larger party we might have explored a considerable area.

After a few days of good weather, we were back to the bad old times on the 31st. On the 30th the temperature was down to −2·0° F., but on the 31st it was between 38·8° F. and 31·0° F. A fairly gusty wind sprang up. My diary records:

It is awful. The snow has become slushy on the surface and compels us to change into felt boots. Although the outer hut did not leak in the morning, it made up for lost time in the evening. Drops fell through even into the kitchen which, up to the present, we had considered a stronghold. To ease matters we removed a quarter of an

inch of ice from the inside of the outer hut roof. Because the weather was warm, our perverse fire behaved admirably and nearly cooked us. Had we been freezing to death, nothing would have induced it to function.

To crown everything, I carelessly left our supper—a plate of shag breast and liver—whilst I was attending to the roof of the outer hut. Florrie was not far away and when I looked round the supper had disappeared! Robbed of this delicacy we sat down to our dull and commonplace diet, only to be deluged by the melting of an accumulation of hoar-frost—a mixture of frozen breath and steam—which had been hidden in the folds of the eiderdowns forming the ceiling of the lounge, so we had to muster all our available pots and plates to catch it.

Next day we were again in difficulties:

An evil day! In anticipation of trouble from the melting of the hoar-frost which clings to the bedroom roof, we took a food pannikin with us to bed. We had accumulated a considerable deposit of hoar-frost on the roof varying from a quarter to about an eighth of an inch thick and it was especially thick on my side owing to the slight slant of the boat. This frost was mainly due to the solidifying of our breath, but over me hung, not only the share that was justly due to me, but also a proportion of Lester's, which I should have escaped had the boat been level. I had been dreaming pleasantly, when at the unearthly hour of 3 a.m., I was awakened by a dull thud and a splashing on my face. In a moment I realized what had happened but for a few seconds felt petrified. I lit the candle and found that a slab of ice had fallen from the roof over my head. The flow of my bad language disturbed the slumbering Lester who, when sufficiently awake to appreciate the situation, did nothing but roll over and over in his sleeping-bag convulsed with laughter.

Seizing the cooking-pot, I placed in it as much as I could recover of the ice on my bunk, but before I had finished another slab came down, just missing my back, and the greater part fell into my sleeping-bag, to the renewed amusement of Lester. I had nearly scooped this lot up when the sheet of frost above my head blistered and, before I could get out of the way, broke all over me. Small fragments started to fall, so I helped the process by peeling as much as I could from the roof to save it the trouble of falling. Then water began to drip. Oh! how I thanked Providence for making water flow to its lowest level. Lester on the lower side of the slope received it all, and then I, too, could see the funny side, particularly when he turned over to avoid some drops and put his foot into a puddle of melted ice inside his own sleeping-bag.

We were so fed up by four o'clock that we deserted the bedroom for our only refuge, the lounge, and although we were not too hopeful of the state of the latter we decided that at all events it could not be worse than the bedroom. After arranging pots to collect the worst of the drips, we moved upstairs. Our sleeping-bags were saturated but luckily the lounge roof had ceased to drip. Lester managed to snatch some sleep, but for my part sleep was impossible; the lounge was too small to allow me to stretch out my legs and my sleeping-bag was inclined to slip over the edge of the boat-deck into the kitchen.

When morning came we took pots, rags and scrapers down below and removed the rest of the hoar-frost. Although we used Lester's mackintosh to cover the bunks, it did not prevent the beds from getting another wetting, but as long as water no longer patters on our faces at night, we can tolerate wet sleeping-bags. After all, the water inside the bags gradually comes to body temperature and we get all the luxury of a luke-warm bath without getting out of bed.

The next day was as mild and calm as an English autumn day; it was light until 5 p.m., and all that could be heard was the barking of the dogs and the cawing of the penguins. The snow had thawed and the ice in the Bay was gradually disappearing.

On 2 September my diary has a more cheerful note:

A good sleep, thank goodness, despite a wet sleeping-bag. Snow has been falling most of the time. The ice to the south is fairly messed up. A lead of open water now extends from our island along the glacier foot southwards, as far as we can see. Lumps of ice and small floes have been liberated this evening and now there are a few off the hut. We can just see a patch of rotten ice which extends from the glacier to the centre of the Channel. This patch, together with the lead, cut off a large section of ice which may at any time float away from the main sheet.

The section of ice, which I mentioned on the 2nd, floated away the following day and left the main sheet, which only stretched south between the most southerly point of the glacier we could see and the south end of Lemaire Island. The ice-foot was also decaying. Sledging southwards on the sea ice would have been dangerous without taking collapsible boats as well.

After a fine day on the 5th, we had wretched weather on the 6th with a strong south-easter blowing and temperature between 14·0° F. and 11·0° F. As was usual after a gusty wind, all the dog-boxes were covered by the snow-drifts and we were obliged to dig them out. It is not a pleasant occupation to work in the open amid drifting snow. The snow takes one's breath away. We worked in silence and with all speed, keeping our remarks to our-

selves. At the end of the job we were well covered with snow, our moustaches were frozen, our beards clotted up, and our nostrils linked to our upper lips by icicles, but it was no time to worry about handkerchiefs. Our noses were becoming very tender and sore. Both of us had had a kind of running cold for months without intermission and we were tired of blowing our noses. We came to the conclusion that we needed a change—a simple one consisting primarily of a large plate of roast beef, Yorkshire pudding and baked potatoes with a large savoury omelette to follow. We were unanimous about this. Lester also had a great longing for rolls and butter, I for toast and marmalade. In short, if we could have been transported to a London restaurant for an hour or so we should have been content. Our diet was efficient and scurvy-proof, but decidedly boring. Minced seal-meat nearly every other night since the beginning of March, some of it at times literally stinking us out, made us feel, even with the recent addition of tinned vegetables, that whatever punishment we may have to undergo for our sins it cannot be worse than an ever-lasting diet of seal-meat. It fell to me to prepare the mince on my nights as cook and the process of passing the meat through the mincer and unravelling the stringy pieces which blocked up the machine, had become a mechanical performance that I could have accomplished with my eyes closed.

My shirt had fallen into two pieces, so I unearthed another, very dirty, but whole. The dog-skin mittens needed frequent repairs as the seams were continually splitting. They were not strong enough to stand the

rough wear occasioned by cutting up hard seal-meat with an axe and a knife.

There was always plenty of scientific work to be done. Whilst Lester busied himself in books and calculations in preparation for observing an occultation, I spent some time on the shore collecting rock specimens and calcareous algæ. I spent quite a lot of time paddling round the shores in my sea-boots looking for specimens. It was most interesting, though rather cooling when it was necessary to plunge an arm into the icy water.

About this time we noticed refraction towards the north when the weather was fine; it made the icebergs appear as though they were lifted out of the water.

After a few days of tolerably fine weather, a bad spell occurred on the night of the 13th. It came from the north-east and caused everything to be drifted up. When we awoke we found that water had been dripping from the bedroom roof, so we did not linger in bed. About noon the wind fell. Snow had fallen almost continuously. For two hours we toiled with shovels to clear the hut door and the dog-boxes from snow. The outer hut leaked so much that inside it was like a miniature rain-storm.

As we had anticipated, we spent an inglorious night on the 15th. Trouble began immediately we went to bed and lasted until we got up. At our heads was an improvised bookcase and under this I arranged as much of my anatomy as possible to avoid the dripping water. Lester had to sit up periodically to wipe water off the roof over his head. All through the night drops pattered on to our sleeping-bags. Some of the water found its

way into my bag, and once I put a bare foot into a puddle. Daybreak alone brought relief and we climbed thankfully out of our black, windowless, apology of a bedroom.

September 17 was a lovely sunny day with the temperature between 18·0° F. and 11·0° F. Lester was able to take a number of sun altitudes while I read the times with the chronometer and noted them down.

On the following day at about 9.15 p.m. the weather looked fairly promising for observing the occultation which had occupied so much of Lester's thoughts. It was to be the end of one period of absorbtion in books and mathematical calculations and the start of another. We therefore collected the necessary gear and took it to the emergency tent, hoping to be able to make the observation through the vent-hole in the roof. Unfortunately the moon's altitude was too low, so we were obliged to work in the open air, but between the telescope, which did not seem to be powerful enough, and the clouds, we saw neither the immersion nor the emersion, in fact, no star at all. By 11 o'clock clouds obscured the moon and we gave up. A halo, not too well defined, appeared round the moon. Lester was disgusted with this failure, as there were no stars of higher magnitude which we could have observed from Water-Boat Point.

We had a thaw on the 20th when the temperature went up to 35·0° F. The snow became slushy and soaked our boots. Coal, released from its icy binding, fell from the roof of the coal hole, but this was not unhelpful for we had been obliged to lie almost full length in the mound to search for knobs with a geological hammer. There

was ample dust, but this was not much use on an autocratic fire which refused to burn anything but knobs.

We noticed that the warmer weather affected the seal-meat mince and made it smell unpleasantly. It was certainly not fresh, for we had not wanted to kill unnecessarily, but when the temperature was low it looked appetizing, rather like corned beef. When high, it became a slushy, bloody mess with bits of repulsive-looking blubber attached, and we realized that we should have to give up using the seal-meat from store and change to fresh meat.

'The man who called this spot Paradise Bay should have the honour of living here!' reads my diary for the 21st. It snowed all day, 7 inches having fallen by 6 p.m., and continued to do so all next day. The wind blew erratically from all directions.

Even the penguins are short-tempered. This afternoon (the 22nd) I saw the first fight of any importance this season. Two birds were at it, flippers and beaks, for about two minutes. Most fights end quickly and abruptly because one bird usually runs away, but these stood up well to each other, indignation on the faces of both. The result was a draw, though each crowed victoriously at the end. Minor fights are continually going on and at times two birds will shoot across the rookery on their breasts, one in chase of the other, upsetting everybody.

September 23 was a finer day. The south wind lowered the temperature. After days of comparatively high temperatures we felt the sudden change very much on our fingers, noses and feet. Everywhere had been slushy, but now was frozen hard.

Most of our spare time in the hut is taken up with writing notes, looking up books of reference, and so on. Tonight we have had a little recreation in a game of dominoes. It is the first game of any sort we have played. We have always been too busy. Lester excelled himself by cooking some rice and apple-rings for supper. We had brought down a few of these apple-rings and a box of raisins on our own initiative and are very glad of them. Thanks also to a happy thought at Cardiff, we bought the two boxes of ship's-biscuits, and these have made our meals of pemmican delightful.

We went over to Coal Point on the 24th with visions of fried shag for supper, hoping to shoot a bird resting on its way to Shag Point, but we were unlucky and had to be content with minced penguin-breast.

But we did find the largest bull Elephant Seal we had ever seen. He was 14 to 15 feet long and had a waist about 12 feet round. He must have weighed about a ton and a quarter. It seemed remarkable, as we looked at the flabby mass, that this huge beast could ever swim. He was too sleepy to do more than open his mouth, show us his tongue, and ugly, dirty teeth, and inflate his nostrils a little.

Just before 8 p.m. a powerful gale sprang up and gradually died down by 10 o'clock. Poor Lester got it in the neck or rather down it, when taking observations at the screen.

To celebrate Lester's birthday on the 25th the morning and afternoon were fine and sunny. The flag was hoisted to denote an event of importance. Gulls mewed cheerfully and the dogs barked. The latter had had half-a-dozen biscuits each to mark the occasion in addition to

their usual rations. We spent an idle day—one or two walks and a dozen or more games of dominoes. We saw the first Adélie Penguin of the season walking among the Gentoos who took no notice of him.

The anticipation of months became realization in the evening. To add an air of festivity I drew up two menu cards. While Lester prepared the meal, I worked the gramophone, did odd jobs and gave him necessary encouragement.

The menu was:

Fried sardines.
Stewed apple-rings with condensed milk.
Christmas pudding with brandy sauce.
Tea.
Crème de menthe sweets. Dried prunes.
Cigars. Wine.

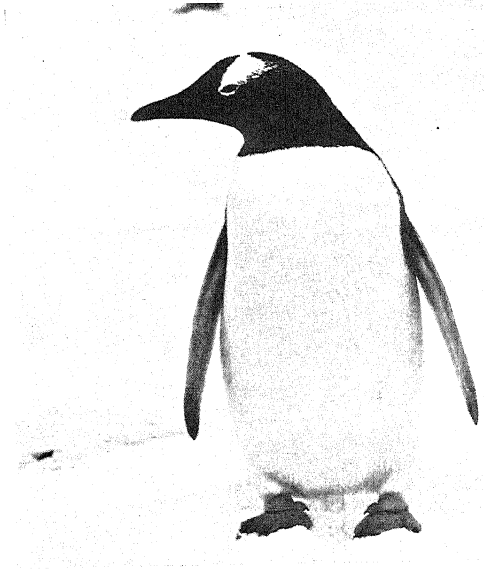
Even the little brandy in the sauce bowled us over. Lester was jolly before we started eating, for he had found it necessary to test the brandy sauce by tasting it on divers occasions while it was being made. After we had had four sardines each we were satisfied, the addition of apple-rings filled us up, and the *pièce de résistance*—the Christmas pudding—finished us off. Having eaten our fill, we waddled to the lounge to listen to more music. Here the effects of the brandy sauce became apparent and we nearly fell asleep. We had a little Burgundy in our only glass, but the latter had been chipped and held very little. It formed part of a set given to me in England, which also included a knife, fork and spoon and was a great boon to us. Without it we should have been minus fork and glass.

By midnight we had reached that stage of drowsiness when it is advisable to turn in or sleep where one falls. It is extraordinary how this small supper upset us, but evidently our stomachs could not stand more than a very simple diet. We felt as though we had had a really dissipated evening.

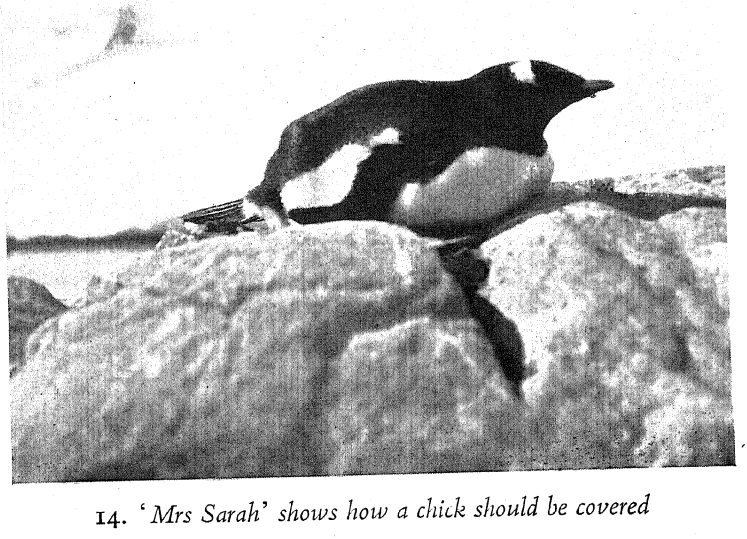
We had begun our last Christmas pudding, but we hoped that we should not be here by Christmas—we had nothing left with which to celebrate it.

As we expected, we slept until late and did not wake until 10 o'clock. We knew while we were in bed that dirty weather had come again because water kept dripping on the side of my sleeping-bag. Snow fell all day long.

After the daily jobs of feeding the dogs, clearing snow away, and so on, we sat and smoked in the lounge. We gathered from the meteorological report of the second Charcot Expedition that we were likely to have snow nearly all the following month as well. What a cheerful outlook!



13. *A Gentoo Penguin*



14. *'Mrs Sarah' shows how a chick should be covered*

Chapter X

THE UPS AND DOWNS OF A TIDE-POLE

When the penguins were fairly established for the coming nesting-season we began to devote a good deal of time to watching their habits. They are amusing little fellows to watch, and in their habits and antics it is possible to observe many a resemblance to human behaviour. One looks down on this miniature society in the same way that Gulliver looked down on the Lilliputians. Some were respectable, some disreputable. Among them went on all the every-day activities of a 'civilized' community. Bravery, loyalty, determination, immorality, deception, thieving, fighting and love-making; the comedies, the tragedies and the adventures; all the vices (and some of the virtues) of humanity were paralleled in the penguin settlement.

We spent long spells patiently waiting to secure photographs, not in itself an enviable occupation; and we had the additional anxiety that the photographs might not come out satisfactorily. There might have been something wrong with the camera, or we could have been timing the exposures wrongly, or some of the films might have deteriorated in spite of the protection of hermetically-sealed storage-tins. We had no opportunity of developing even a single spool for testing, so we could not tell. It was not encouraging taking

hundreds of photographs without knowing how they were turning out. Photographing the penguins was a cold job; to catch some special attitude often involved sitting on the ground for an hour or more, as quiet as possible, waiting for the ideal moment. Often the bird on which we were concentrating was almost the only one in the colony not giving the performance we were trying to record. My nose, especially, felt the cold and was very sore from constant blowing and wiping. However, we managed, by perseverance, to secure a large number of photographs which illustrate penguin habits very well.

October started badly with a gusty day and a 2-inch fall of snow during the night. On the 2nd snow fell all day, the spicular crystals larger than usual. A gusty wind blew in the afternoon and up mounted the temperature from 27·0° F. to 32·0° F. as the day passed. The penguins seemed not to mind the snow-storm, judging by the way they crowed and chased each other. Next day was a contrast; we awoke to find a fine, sunny day with an almost clear sky.

We often wished that we had been left at some more interesting spot, Hope Bay or Snow Hill Island for instance, so that we could have produced more interesting results after a year's work. To live on this small group of islands, in total area only about the size of a country garden, was very much like being in a small prison camp. So near, and yet so far, we longed to peep round the corners in the distance. The mountains which surrounded us hid much of the view. But what our little home lacked in size it certainly made up a

hundredfold in dirty weather. If ever there was an area where the atmospheric pressure was chronically low, Paradise Bay was in the middle of it!

We had further difficulties with our boots. At this time it was too cold to wear ordinary sea-boots and too wet for felt boots or *finnesko*. But we had no further choice so wore felt boots. These were soaked through and through and made our feet extremely cold. One of my boots had a considerable hole in the back of the ankle which did not help to keep my socks dry. Indoors we wore *finnesko*.

Owing to the awful state of the roof of the outer hut, we had to change our boots in the open air. Directly one lot of snow was cleared from the roof, another lot fell, so we decided to raise the roof in the centre by propping it up with a pole. To do this it was necessary to take off four wooden sledge-runners which we had laid across the top, but at this time of the year we felt more inclined to run the risk of losing the roof in a gale in dispensing with the strengthening effect of the runners.

Weather conditions on the 5th—barometer falling, wind from the north, and attempts to snow—indicated that bad weather was approaching. We had it all right. It came to stay for several days. Sleet and snow fell almost continuously, with the temperature about freezing-point. How familiar (and how loathsome) became the sight of falling snow. The fire, which kept alight fairly well when the temperature was higher, maintained its usual contrary behaviour.

The slushy snow, driven by the wind, contained salt

and made our eyes smart. There was so much water on the roof of the outer hut that we were able to fill pannikins in a few minutes as it trickled through.

The 6th was a memorable occasion. My diary reads:

I cut my hair today with some clippers which I had brought down with me. As far as I can ascertain from the small mirror and Lester's comments, the result might have been worse. Before this I looked like a cross between a bobbed-haired girl and a low tramp. We comb out our locks each day; they become well tangled up with sleeping-bag hairs, the bane of our house-cleaning activities. We long for a good shave, hair-cut and shampoo. My last proper hair-cut took place in Cardiff a year ago; my last bath, except for cold baths in the tropics and a wash down here in a pannikin of water, was also twelve months ago. The whalers should be in the tropics by now, but we do not envy them in the sweltering heat; we almost prefer our own lot.

There is a touch of home-sickness in my diary for the 8th:

It was a year ago today when I left Cardiff, and a year ago tomorrow when Lester left. The sadness of parting from England and friends is vividly in our minds, though like the fear of illness we try now and always not to think about it too much, and rarely talk of it. We know that to get through we must preserve the utmost hopefulness and cheerfulness. Had either of us been addicted to melancholia, heaven knows what would have become of us; some days have been so trying that we could easily have sat down and wept with misery and depression, but we always tried to make a joke of our troubles.

To celebrate, or rather, to commemorate our departure we ate the last slice of Christmas pudding with brandy sauce

for supper. Since we were about four hours behind Greenwich time, the 8 o'clock supper was really at midnight in England, so it served to commemorate both farewells. Our full menu was very simple:

Fried baked beans.
Christmas pudding and brandy sauce.
Tea.
One *crème de menthe* sweet.

We greatly enjoy a *crème de menthe* sweet after supper with a cigarette and only wish we had enough to increase the ration to two each. They taste cleaner than anything else we eat.

Snow, snow, snow, day after day, with only an occasional intermission for a few minutes! We were obliged to resort to sea-boots. My oilskin had nearly fallen to pieces; the cold temperatures had cracked and ruined it. The snow-drifts compelled us to make a detour into the Bay to reach the meteorological screen.

For some reason or other I always hated the 13th and 14th of a month and expected something of an unpleasant nature. The 13th justified my forebodings. By accident I left the hut door half open when we went to bed. During the night a powerful wind blew, with the result that in the morning we found a considerable drift inside the hut. I had the pleasure of clearing it away before breakfast. Each time the door was opened to throw some snow out, more drifted in. A great deal of snow collected around and in the hut whenever there was a strong wind. A north-easter or an east wind piled up a drift on the lee side and took away our breath when we went out; a southwester blew snow straight into the door.

We were thankful for a sunny day on the 14th, though it was cool owing to a southerly wind.

We had to put a stop to the trespass of a pair of penguins who decided to occupy the bow of the water-boat for nesting purposes. They spent the night pacing the deck above our heads like a couple of watchmen. We requested them with some force to desist, but they took no notice, so we dug a trench in the snow round the bow to prevent them from reaching their prospective home. We were beaten, however, for they avoided the trench and climbed on to the roof of the hut and so, *via* the sacks of sennegrass, to the boat-deck.

As the 15th was a Saturday, we had the usual house-cleaning which by now we had developed into a fine art. It was a job that we both disliked intensely. After breakfast we washed up, that is, we cleaned the pemmican- and mince-pots, the glass of the hurricane lamp, meat and mince plates, mincing-machine, tea-pot lid, water-pot and wash-pot lids, tooth-mugs, and other oddments. We then changed the water and washed out the table-cloth, drying-cloth and cleaning-rag. This Saturday was typical. Lester then went down below where he cleared the reindeer hairs from the bunks and adjusted the eiderdowns and sleeping-bags. He cleaned down the bedside table, replenished the supply of chocolates (of which by good fortune we had a generous stock) and cigarettes, attended to the candle and emptied the ash-trays. All this had to be accomplished on hands and knees. Meanwhile I chipped the ice from the floor of the outer hut and swept and tidied it. Lester, who had finished his duties a little before I had, cleared the rugs from the lounge and put them near the door for me to shake outside. He then swept down the lounge and

replaced the rugs after I had shaken them. I shook the pillows and fur stockings, the latter being used in the lounge, and handed them up to him. Then Lester went down into the kitchen and here he cleaned the candlesticks and the pemmican board. He then passed out to me all obstructing furniture which I disposed about in the outer hut, taking care to avoid the leaks. I filled up the ice-pot and after Lester had swept the floor handed him back the furniture, shook the carpet and emptied the slop-pail. On this particular day it took us from 9.45 a.m. to 1 p.m. The confined space made the work very awkward. It was entirely due to Lester's nautical love of tidiness that we ever lived in an orderly fashion.

It was Lester's day, on the 17th, to have his hair cut, and he needed it badly, for he looked a freakish mixture of artist, poet and actor. The back and sides were managed satisfactorily with the clippers, but the top puzzled me. All we possessed were nail-scissors and I am sorry to say that Lester's head had rather a tufted appearance by the time I had finished with him.

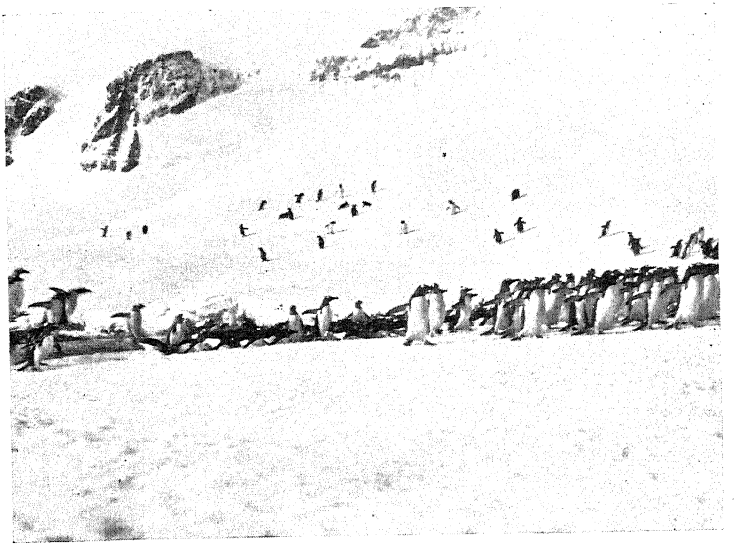
The 18th was a day of disappointment. After breakfast the sun shone beautifully and we felt warmer than we had felt since the first few days of our arrival. The temperature rose to 35·0° F. in the screen. We hastened to collect our belongings, both of us planning the work we would do, but in about an hour clouds sprang up, the wind changed round, the temperature fell, and we were back to good old times.

A strong south-west wind on the 20th brought the temperature down from 30·0° F. to 13·9° F. during the course of the day. The rapid changes in temperature

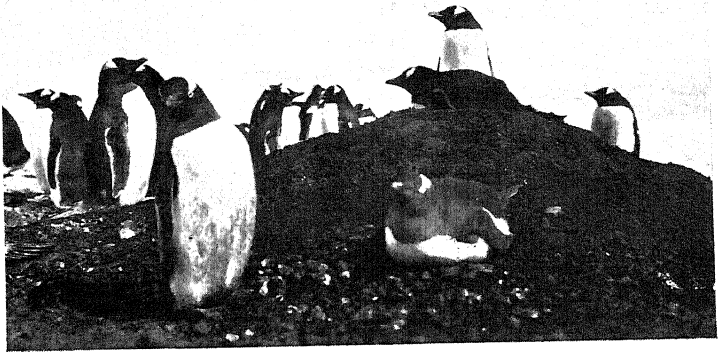
made us feel the cold more intensely than we should otherwise have done.

For some time we had been rigging up a tide-pole in readiness for a series of observations. Luckily we possessed a wooden barrel which, after much exertion, we excavated from the snow and ice. It formed the base, and inside we nailed half an oar which projected from the top of the barrel. We graduated the oar and nailed a vertical strip of wood outside the barrel so that we could complete the scale. When this was done it was ready for painting. To make the scale visible from a distance white enamel strips were painted every alternate 6 inches, the intervening 6 inches being left unpainted. Between these strips we marked every 3 inch interval with a white line, and divided the white strips with red lines across the centre.

In spite of the ice which lay around, we decided on the 21st that it was about time we erected the tide-pole if we were to make certain of completing observations before being relieved. We chose a spot in a tiny bay on the north-west side of Water-Boat Point between the West Rocks and the Island, and carried it there. Lester wore sea-boots and I long rubber waders to enable me to get into deeper water. Lester fixed a rope through a hole in the barrel and held on to one end while I floated the barrel out as far as I could wade. The bung-hole was left open to sink the barrel which I arranged so that it rested level on the sea-bed. Lester threw me some smallish boulders to put inside. The first two or three arrived all right, the next I caught on the wrist and another on the hip. Thence-



15. *Gentoo Penguins arriving on the ice in the Bay*



16. '*Ash-Dump Anne*', '*Dora*', *and other inhabitants of the ash-dump*

forward we did the job more carefully. After we had filled about two-thirds of the barrel with boulders, we put in a few shovelfuls of shingle and finally more stones. These made a fairly solid structure. Next Lester passed to me the biggest boulders he could carry and I piled them around the base except where the scale was fixed. The barrel was then attached to a large boulder by a rope. The whole job took us about three hours and by the time we had finished it we were feeling exceedingly chilly. We hoped that the tide-pole would be satisfactory and escape damage by the drift-ice.

Observations started the following day and were favoured with fine weather and intermittent sunshine. Lester, who had been busy preparing log-books and so on, was happy, and so was I because I knew that it would soon be possible to obtain many more notes on the habits of the penguins and other birds.

As a beginning we proposed to take tidal readings every two hours at the same time as the meteorological readings. We could see the scale up to 8 p.m. We should start more intensive observations later on as the light improved. As far as we could tell, the current which passed our base was a tidal one, perhaps involved with the definite north-east set of the currents of this region.

26 October was a dull but warm day with a fair amount of snow falling in the evening. After we had fed the dogs, we went for a walk round our domain. The lifeboat we found still entirely hidden by snow, the sledge-boat almost completely hidden and the emergency tent half buried. A little scattered ice lay to the south. To the north was much brash-ice, which, during the after-

noon moved rapidly southwards. Off the north-east point of Lemaire Island was a large irregularly-shaped iceberg.

Two days later an Adélie Penguin came up on to the Bay ice and seemed much perturbed at finding himself among a colony of Gentoos. There is as much difference between the disposition of an Adélie and a Gentoo as between a Frenchman and an Englishman, for the former have a decidedly Gallic restlessness of temperament. Several times he walked to the edge of the ice-foot and prepared to jump back into the sea, but a fresh party of Gentoo arrivals jumped on and caused him to rush back as hard as he could in a fearful panic. He made several more attempts to leave, but was scared back by new arrivals each time, so he gave it up as a bad job and bustled around with the mob, 'kaaing' a great deal.

On 30 October the days of peaceful slumber were ended, for on that day we began nightly tidal observations. It was my watch from 8 p.m. to 2 a.m., then I turned in and Lester took a watch from 3 a.m. to 9 a.m.; and so we proposed to continue, taking six-hour watches alternately for thirty days. We took readings every hour.

I recorded in my diary for the 31st that:

The night was cold and damp and my sore nose responded painfully at every hourly visit to the tide-pole. At 1 o'clock I saw a most extraordinary sight—the fishing expedition of the penguins. At midnight they had been lying down, but now most of them were standing up and gradually congregating in a compact body at the north end of the Island. The birds from South Island were marching in a column across the Bay to the north end. At Coal Point they

were congregating on the north-west side. One line was coming over the rise from Coal Point Bay, and another column from the main rookery. In about twenty minutes most of the occupants of the rookery were massed in thousands at the north end of the Island. Several birds were crowing vigorously as if they were issuing commands to the others. Nearly all of them were standing. I left them, expecting to find them still there at 2 o'clock, but when I went out again at that hour all had gone except a solitary bird at Coal Point, about thirty on the edge of the Bay ice, and some fifty or so at the north end of the Island.

In the darkness at 1 o'clock in the morning, the performance which, with variations, we witnessed each night until the egg-laying began, looked so strange that it made one feel as if one were dreaming and would soon wake up. I could not help being awed at the potential power of this vast mass of birds as I realized what strength they could exert in combination. The scene reminded me of a passage in Stevenson's *Travels with a Donkey*:

'...and there is one stirring hour unknown to those who dwell in houses, when a wakeful influence goes abroad over the sleeping hemisphere, and all the outdoor world are on their feet. It is then that the cock first crows, not this time to announce the dawn, but like a cheerful watchman speeding the course of the night. Cattle awake on the meadows; sheep break their fast on dewy hill-sides, and change to a new lair among the ferns; and houseless men, who have lain down with the fowls, open their dim eyes and behold the beauty of the night.

At what inaudible summons, at what gentle touch of Nature, are all these sleepers thus recalled in the same hour to life?'

At 1 a.m. it had been dark, but at 2, to my surprise, it was light. In spite of the darkness I had managed to obtain a continuous series of readings, so we are more satisfied with

them now; previously we had felt a little uncertain about them, for it was difficult to see the marks in the dark. I turned in after the 2 o'clock observations and Lester took over, calling me again at 8.45 in time to take the 9 o'clock readings. From 11 a.m. to 1 p.m. Lester took them and then retired for a rest. I then took over until 8 p.m. when my bed-time arrived.

1 November was a fine day, but cloudy. Lester's troubles ended and mine began at 2 a.m. On this day they actually started three hours later when I saw what looked like three Ringed Penguins at Coal Point, and hastened over there with my camera. While walking on the slope which faces the Bay, I slid on the extremely slippery hard snow, but fortunately was able to stop myself while gaining impetus by turning on my front and lying down, or otherwise I should, in all probability, have had a cold bath from falling over the edge of the ice-foot. It gave me a few uncomfortable seconds, for, although the water was not very deep, I should have gone well in and if I had got into difficulties could not have relied much on attracting the attention of Lester who was sleeping soundly in the boat a good way off.

They were Ringed Penguins. After taking several photographs I started to climb back over the slope, when suddenly the telescope fell out of my pocket and rolled down the slope over the ice-foot into the water. I located it in the clear water and after the next observations tied the dog-bowl to the end of an ice-pick, so that I could use it as a ladle, and returned to Coal Point. After some perilous minutes lying on and leaning over the edge of the ice-foot, expecting each moment that it would give

way and make me take a header into the water, I succeeded in lifting the telescope on end so that it toppled into the basin. Using a snow-shoe to keep it in position, I hauled it, with a sigh of relief, on to land.

The sight of the three Ringed Penguins heralded the return of the colony after their winter migration. We had not seen them since the beginning of April.

We had been using improvised guards lately to protect our sore noses. The guards consisted of a piece of bandage doubled over and gathered in at the ends to make a little trough in which the nose was hidden and were tied with a piece of tape which fitted over the head. They were an invention of Lester's, but not one which was to be greatly recommended for there was a 'snag' in it as we found later. It was all very well while the protecting guard was there, but when it was not in use the protected part was more tender than ever, and needed still more protection.

That night, from midnight until 1 o'clock, I stood watching the departure of the penguins' fishing expedition, no less amazed than the previous time. I wrote:

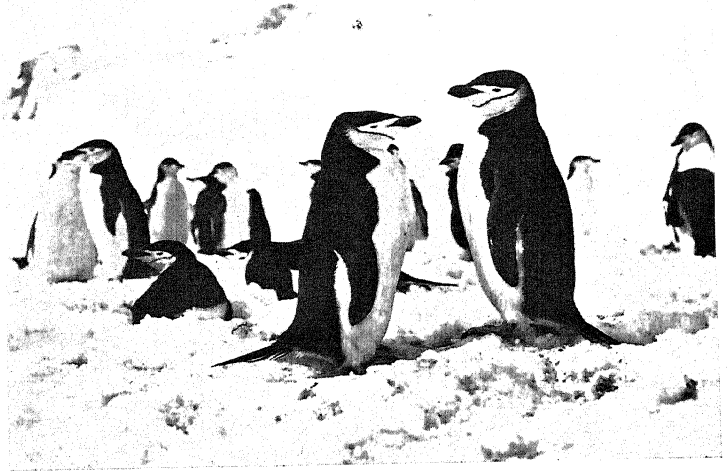
It is, we both agree, the most impressive sight we have seen in the Antarctic. While watching them one is compelled to keep absolutely still for fear of disturbing the organization. It would be an outrage to be the cause of one stop in the movement. To see the birds arrive on the rookery during the day, in any order, squabbling and chasing each other about, makes it seem almost incredible that this disreputable mob can be transformed into a well-disciplined army. If a crowd of as many thousands of human beings were to gather in like manner, packed close together, there would almost certainly be disorder. But not so with the penguin. He has

his methods of organization and even if his plans are a little upset as they were this morning, owing to the very low tide, he merely finds the next best point from which to take off and leaves from there. Today I was able to watch the details which, in my bewilderment, I had missed to some extent the time before.

Lester woke me at 10 o'clock on the 6th with the dismaying news that the tide-pole had disappeared three hours previously and that a large piece of ice weighing several tons, which had been floating around for some time, was above the spot where it should have been. We spent, in consequence, a depressing morning under the impression that we had seen the last of the tide-pole. We went on the shore before tea when the tide was getting low and could see only the block of ice, but afterwards we were delighted to find that the tide-pole and tub had only been knocked over and were not broken. We did not expect to be able to do much but I donned my waders for we hoped to clear away some of the ice. However, we did more than this, for while Lester in his sea-boots hacked away at the ice I contrived with much difficulty to manipulate the large stones which surrounded the barrel and get the whole thing upright in its proper place. After nearly three hours' toil we had everything in order and although our trousers were saturated we were pleased with the result. To celebrate it we had a second tea. As we were feeling tired, we took a night off and decided to resume readings on the morrow.

At 9 a.m. on the 7th Lester went out to recommence tidal observations and saw the fall of a section of glacier

17. *Ringed Penguins preening*



18. *A pair of Ringed Penguins wait for their nest to appear*

at Lemaire Island which set up a big swell which in its turn set several blocks of ice jumping playfully about round the tide-pole. One block knocked the pole half over and wrecked the previous day's hard work in a second. We naturally felt annoyed, but we were sure that in the afternoon, when the tide was low, we should get it upright again without much difficulty.

Unfortunately our hopes were shattered, for when we went down to the beach after tea we found that the tide, for some reason or another, was not particularly low and was even beginning to rise. I waded out as far as possible, carrying large stones which I dropped in front of myself to form stepping stones, and managed to get fairly close to the pole when I overbalanced and landed in the water well above the tops of my waders. As I was wet it was a pity not to carry on, so I made the last step and got wetter still. But after all this effort I could not straighten the tide-pole and the water was too deep to allow me to move the stones about. Reluctantly giving up the job as hopeless, I hurried back to the hut and spent the rest of the day drying out clothing.

On the ice in the Bay we came upon a Weddell Seal with a young one (a male) beside her. The youngster's coat was woolly, light in colour and spotted. When we arrived with our cameras he was 'baaing' very like a lamb—a jolly little fellow, chubby and noisy. After a while mother slid off into the water and left her offspring to our cameras. Soon she appeared on another part of the broken-up ice in the Bay from which with 'baas' she exhorted her son to follow her. Her son apparently replied that although he did not like the look of us he

disliked the prospect of a cold bath even more, but after a good deal of argument he obeyed his mother's orders and slid into the water, finishing his complaints with a gurgle from below. Eventually he reached the piece of ice where his mother was and did not scruple about making use of her to pull himself on to the ice. As he scrambled up they appeared to kiss one another two or three times. We had always greatly desired to see a baby seal, so we were happy that our wish had been gratified.

After tea next day we spent an hour and a half hanging around hoping for a chance to straighten the tide-pole, but the tide was too high for us, the sun and moon being in quadrature. Why need that piece of ice have hit our pole when it had all the rest of the Antarctic Ocean to float in? We even tried to build a causeway to the pole with rocks, but without success.

9 November was an awful day with snow falling hard most of the time. Since 23 October the snow on the Island had deepened by exactly $5\frac{1}{2}$ inches. We could not see the tide-pole at all; it was obscured by a small floe which lay on top of it. We found some satisfaction in knowing that even if we had re-erected it the day before, it would certainly have been knocked down again.

Next day there was still a good deal of brash-ice around and still no sign of the tide-pole. Taking advantage of a sunny day, I walked over to Coal Point where I found over a hundred Ringed Penguins in residence. They differ greatly from our friends, the Gentoos. They are smaller, more alert and more restless. They walk with steps like those of a gouty old man. They do

not chase each other about as the Gentoos do; usually their differences of opinion are easily settled. The offended one makes two or three laboured steps towards the offender, while the latter jumps back two or three steps, and so the matter ends.

The journey to and from Coal Point was fraught with the risk of a ducking in the water below; the steep glacier slope had to be negotiated with care, especially where penguins had made the snow slippery and hard. On my return I had a good view of a Leopard Seal (*Stenorhynchus leptonyx*) on the war-path. After a futile attempt to catch two penguins, he lay in a shallow pool below where I stood, and watched me with longing eyes, as though he hoped that I might slip. I doubt whether a Leopard Seal would attack a human being, but I prefer someone else to try the experiment; they have wicked-looking jaws. This one spent most of the day in the Bay worrying the poor penguins to death. He was no match for them in swimming and had to content himself in endeavouring to catch unwary ones by waiting for them to dive off the ice into his mouth.

In my diary entry for the 11th I observed that: 'It is strange that we have not seen or heard any whales lately. They must be keeping farther north, perhaps in Bransfield Strait. We may surmise that even if the whalers have arrived at Deception Island there is not much likelihood of our seeing them for some time.'

There was bad weather for the next three days, but the tides were getting a little lower so we hoped that if the pole had not been crushed we should have it in order before much longer. We were not disappointed,

and on the 15th, which was luckily a fine day, Lester took some sextant readings while I, who possessed the only waders, attended to the troublesome apparatus. I had no difficulty in reaching it, and was relieved to find that it had suffered no damage except that one of the hoops had broken loose. This was soon put right. All the stones and gravel had to be cleared out before the barrel could be moved. I erected it 6 feet nearer to the shore in slightly shallower water, so that we should have a better chance of reaching it if there were any more accidents. The bottom on which the barrel rested this time was more level and made the whole thing more rigid. Near by I constructed a rudimentary barrage to give a little protection against drifting ice. While building the barrage I heard the splash of a Leopard Seal in the shallow water about 15 feet away; I did not wait to verify its presence but bolted as hard as I could go. When I turned round I saw the Leopard Seal doing the same thing in the opposite direction. He must have found the tide-pole attractive; when we were re-erecting it last time he came quite close.

The same night we resumed observations. We were glad to begin them again, for we had been disorganized by recent events and both of us were behind with our logging. The dawn and early morning were fascinating and when the weather was fine gave us pleasurable thrills and stimulation. We felt at peace with life and ready for anything. Our little world, too, looked fresh and sparkling, and we seemed to get more fine weather in the early morning than during the remainder of the day, just as we do in England.

Chapter XI

PENGUIN NEIGHBOURS

The night watches were not disagreeable, for at midnight it was so light that we could almost read the thermometers without a lamp. We had no difficulty in reading the tide-pole at 10 and 11 p.m. The sea was beautifully calm and only light breezes came from the south. I watched the penguins leaving for their fishing excursions for an hour at midnight and as usual those at Coal Point got away first, to the great annoyance of the Island occupants. It was curious that the Gentoos departed *en masse* more or less in military order, but the Ringed kept to their rookeries all day and night and made their fishing trips individually.

On the night of the 17th the severed ice floe finally floated away from the Bay, and we had a change of scenery. The temperature was high, so it looked as if the snow might begin to disappear. We were anxious for this to happen and so no doubt were the penguins. Everything was buried in snow; no sooner had we brought a supply of ice up from the shore than it was hidden from view.

There had been no ice to the north during the previous day or two, but to the south and south-west there had been a good deal of fairly close brash. The channels were almost clear of ice except for small local accumulations here and there.

The time really passed rapidly, though some days seemed never-ending and I sometimes wondered during a lonely walk how I could wait for the many days to pass before I should see home. There was plenty of time to soliloquize. The afternoon of 20 November brought to an end my first year in the Antarctic regions; on that day a year before I arrived at Deception Island.

As usual the fire gave us much trouble and had to be re-laid as many as three times during one day. We had long ago covered the whole range of our united vocabularies, but in justice it must be said that it was less the fault of the fireplace, or more correctly, the bucket, than that of the poor quality coal.

Bad weather was with us all day on the 22nd, snow falling almost continuously. In the evening, owing to the calm, a thin film of ice formed round the West Rocks and the tide-pole and broke up into small irregularly-shaped sheets. Snow accumulated rapidly and we wondered whether we should ever see the surface of the Island again.

We were unlucky in the way of accidents. Lester shot a penguin and to prevent it escaping to sea he hit it on the head, breaking in two the butt of the rifle. Even then I had to finish it with a geological hammer. During the early morning two penguins, not looking where they were going, fell into the meat excavation. Lester rescued one, but the second pecked him so hard that he left it alone. Later on I thought that the penguin might be feeling repentent and more amenable, so I climbed down and managed to get him out, but received for my trouble a strong and quite painful blow on the back of

the hand from his flipper. It smashed the glass of my wrist watch, which was a nuisance, for it was the only ordinary watch we possessed and had been most useful to remind us of observation-time. I endeavoured to make the best of a bad job, and constructed an outer case from an empty tooth-paste tin. The watch was hinged inside with copper wire, part of the strap hanging out of a slit in one side of the tin. This was joined to a piece of string which pulled the strap taut and held the watch fast inside the tin. The string could be undone when the watch required winding. The little box fitted into a small chamois-leather bag which in turn fitted into a pocket, made from a geological specimen-bag, in my suit. It was better than nothing, but, owing to the number and position of the buttons on our suits, it could be extracted only with difficulty.

The penguins were becoming much less organized and more irregular in their methods when assembling for fishing expeditions. The greater part of the population at Coal Point assembled for departure but decided against it and returned to the rookery to settle down again. The Island inhabitants left, except for a few scattered individuals headed by a lady we called Sarah and her husband. The latter pair had a very smart nest mainly owing to Lester's contributions of cinders, with which offerings he had almost displaced her husband in Sarah's affections. But they were not content and had, I regret to say, pilfered the very small collection of a neighbour while the owner was out fishing.

The penguins were incorrigible thieves, and the party round the ash-dump dared not leave their nests for fear

of robbery. Fighting and high words went on between them in the early morning. The saddest part about it was that they were immediately outside our bedroom and had absolutely no consideration about disturbing us.

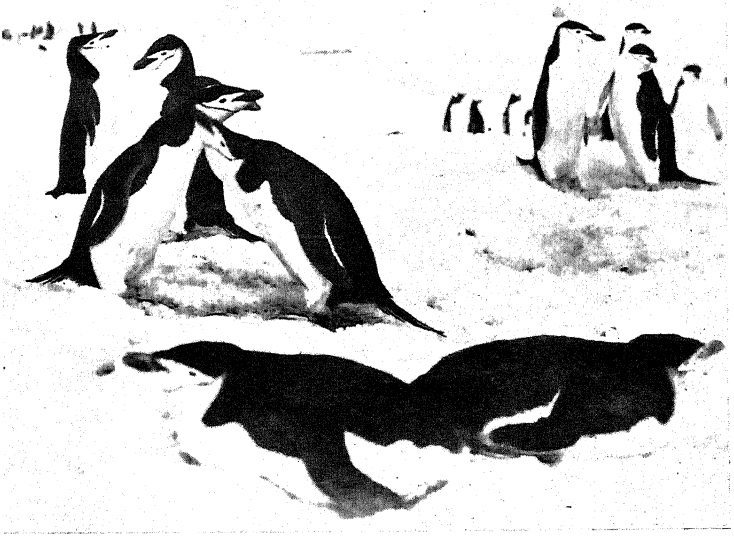
We named one pair of Gentoo penguins the Tweedles, short for Tweedle-Dum and Tweedle-Dee. These, too, occupied the ash-dump. One morning there was uproar and fighting in this select quarter. Two outsiders who did not belong to the original prospectors wished to set up house on the slope of Queen ('Ash-dump') Anne's pile, but, in carrying out their intention, exasperated several of the older inhabitants, including the Tweedles and even the regal Anne herself. While the intruders defended themselves against the pecks of the neighbours, Anne endeavoured to pull feathers out of their tails with her beak.

What with entering up the various logs, observing movements of icebergs, attending to household duties and so on, we were kept fully occupied during our watches. The early morning observer was responsible for the hourly observations from 3 a.m. to 8 a.m., the 11 a.m., noon, and 1 p.m. observations and those from 9 p.m. to 2 a.m. The other had the 9 and 10 a.m. and those from 2 to 8 p.m. We rested in turn in the afternoons from 1.30 to 4.30.

On the 28th we opened the last case of candles. We had one hundred and fifty left until we were relieved, whenever that might occur.

29 November was eventful; the penguins laid their first eggs on that day. While walking on the Ringed Penguin rookery on South Island I noticed that one pair

19. *Ringed Penguins serenading*



20. *Ringed Penguins making love*

possessed an egg laid in a hollow in the snow, and on the east side of the gully I found another pair with one egg. Very pleased with the discovery, I searched among the Gentoos and found that Dora, who lived on the ash-dump ,was now the proud owner of an egg. I discovered another later in the middle of the rookery. In the afternoon Lester found four more Ringed eggs. By 10 p.m. nine had been observed. It was noticeable how the possession of an egg altered a penguin's behaviour. Instead of hustling away on our approach, the instinct to protect its young predominated, and the bird would pluckily stick to its nest to defend its treasure.

One reason for delight at discovering eggs was that we could look forward to a change in diet, with no more minces. We knew that the change should be beneficial to our health; neither of us felt very strong, although we were not actually out of condition. I found that the slightest amount of overworking exhausted me, but I am, however, inclined to credit this to the unhealthy conditions—the smoke and so on—inside the hut, rather than to the Antarctic climate, in which there were no reasons for ill-health.

Lester very considerately and without hesitation put aside any idea of eating the eggs until there were sufficient for observation purposes. We were both anxious to eat them, but we felt that the scientific work should have preference.

All day we collected boulders from the shore and painted numbers on them in enamel so that they could serve to identify nests which we wished to keep under observation during the incubation periods.

Charcot gave the date for the first Gentoo egg as November 18. This date differed from ours, a rather curious fact, for the Petermann Island rookery was farther south. It was also curious that at Water-Boat Point both species of penguins began to lay on the same day.

I went to bed at 2.45 a.m. on the 30th and slept like a log until it was time to get up. After breakfast I walked along the shore to Coal Point to see how things were progressing on the rookeries over there and found that seventeen Ringed Penguins each possessed one egg, but could find only one Gentoo with an egg.

Much scientific work was anticipated after tea, but my labours actually turned out to be of a somewhat different nature. On returning from 2 o'clock observations, I found, to my disgust, that the canvas roof of the coal-hole had fallen in. It took me two hours to clear some of the snow away and incidentally to collect enough lumps of coal to last us a few days. Such an accident as this would, of course, happen when we were most busy. It was impossible to do a great deal that day to clear up the mess, and we prayed that snow would not fall or the wind blow during the night, for the coal-hole entrance was as bad as an open door.

My early morning watch on 1 December was spent excavating dog-meat, clearing snow away from the coal-heap and finishing the painting of the numbers on boulders to be used for penguin observations. There were now forty-six of these marked boulders ready. The morning was very fine and calm, and made a great difference to our enjoyment of life. After breakfast we

restored order to the coal-heap and rearranged the canvas cover above it.

We were in great fear for the safety of the tide-pole which was surrounded at low water by many large pieces of ice. One lump lay only 3 inches away until we cut off a couple of feet along the edge. We had no idea what would happen when the tide came up and the pieces of ice floated.

At the moment we were living in distinct comfort. The temperature outside was about 40·0° F. and the fire was going like a furnace for the first time in its short but aggravating life. At 6 p.m. the temperature inside was up to 82·0° F., and although the door was wide open, I wrote my diary and notes in my underclothes. In the afternoon the temperature was only 40·0° F. in the bedroom, but I had very little sleep because of the heat in the sleeping-bag. We would have welcomed some of the superfluous heat on those days when nothing we could do would make the fire burn!

The penguins were slow in laying eggs. We wished that they would get on with it so that we might have a meal. Dora, on the ash-dump, laid her second egg on 1 December, and so, too, did the bird in the middle of the rookery. Dora looked coarse and dirty. She was an unprepossessing bird, rather like one of those down-at-heel women with large profiles and untidy hair whom one sees surrounded by never-ending families and who leave behind them wherever they go the aroma of stout. Her slovenliness was accentuated by the semblance of a double chin and a dirty apron, if one might call a front by the latter name. Her two eggs were filthy and

coated with guano and ash. A continual din reigned around the ash-dump, mainly caused by Dora's rasping objections to the presence of any other bird in the vicinity of her nest.

On 2 December I wrote:

Eggs are becoming slowly but surely more numerous. Between midnight and 2 o'clock this morning, Dirty, a Gentoo lady, laid one, but the chick has absolutely no chance whatever of surviving, for the nest is placed on the snow on the Bay below the high-tide mark. Dirty looks like having a considerable shock when the Bay ice-foot disappears and she finds her precious eggs in the sea. Her instinct has failed her.

Half-an-hour after midnight I noticed that Anne, the Queen of the Ash-dump, had condescended to emulate her subjects and lay an egg. I committed *lèse-majesté* by lifting her up by the tail while I inspected her new acquisition. A penguin is top-heavy, and if one upsets its equilibrium by raising the tail, the bird lies powerless on its breast. In that way eggs or chicks can be examined with comparative ease.

I blew some specimens of Ringed and Gentoo Penguins' eggs for our collection. It requires considerable blowing-power to extract the white of the penguins' eggs, which is very stiff. We fried the contents of the eggs for supper. They made a wonderful scrambled-egg-cum-omelette meal. Their preparation was simple. Lester heated a little of the ten-months'-old butter, preserved especially for such occasions, in the frying-pan and then poured in the egg which after a time hardened and appeared in all its glory as an omelette. Never had food given me such a thrill of pleasure before; it was such a marvellous taste after our other food, and we

knew that these eggs would do us a world of good; in fact I almost felt in better health immediately. Former luxuries—fried sardines or baked beans—took second and third places from that time.

The continuous sunshine caused rapid thawing and the penguin rookery was in a state of indescribable filth. Rocks and all sorts of things which had been covered with a mantle of clean white snow, were reappearing covered with mud and guano. Even in half a day there was an appreciable difference. The dog-meat, once as hard as wood, was slushy. We gave the dogs water but they seemed to prefer the snow.

Tidal observations were no light matter. I wrote in my diary:

> The fear we had yesterday evening was luckily a false alarm. Today, a strong breeze in the early morning, although it lasted only for ten minutes, has piled ice thickly round the pole. During the late morning and all the afternoon we had to climb down on to the shore and walk as near as possible to the pole to obtain readings. Once or twice it was even necessary to grovel on hands and knees to get a reading, for with the exceptionally low tides the water falls just below the level of the bottom of the barrel. The job has not been improved by the icy water which dripped down our necks when we were kneeling down. The prospects of the survival of the tide-pole are pretty poor.

We had another omelette for supper the following night. Like the last it was made from the blowings of eggs selected as specimens. By the time the eggs were blown they did not need much stirring! I could not help but admire the way in which Lester ate the blowings

without hesitation, for, in spite of my best endeavours, they were not entirely undiluted egg!

There was so much to do that the days passed by rapidly. The 'observation' penguins had to be inspected frequently. Eggs had to be re-marked—we found that the marks made by indelible pencil were not as satisfactory as those made with Indian ink. There was a moment of great excitement when Dolly of the dirt-dump laid her first egg, and again when Sarah laid hers. Egg-laying time seemed to make the birds tamer; one or two even allowed us to give them stones which they took in their beaks from our hands.

The penguins had also altered their fishing routine. Instead of departing *en masse* as hitherto, they left casually at any time of the day. They did most of their fishing near the shore; previously they went some little distance away.

I got up before 3 a.m. on the 5th and was busy writing until 6 a.m. A little time before breakfast was spent in digging up dog-meat, replenishing the coal-boxes and ship's-biscuit bag, and so on. After breakfast, until lunch-time, I was outside examining the observation penguins, hampered by wet driving snow. There were no casualties. Some birds gave no trouble when lifted up by the tail, others resented the indignity most decidedly and turned round to peck. The ash-dump was the worst part in which to work. There was great congestion and while attending to one bird, unamiable neighbours would endeavour to peck pieces out of my trousers. The old penguin-carcases and flippers were becoming exposed to view and were beginning to smell very unpleasantly.

Mixed with an accumulation of guano and ashes lay pemmican tins, milk tins and all sorts of rubbish carried away from the dirt-dump nearby. The penguins wallowed in muck.

Lester spent some time at the tide-pole adjusting the stones round the barrel; they had been knocked about by the ice. He nailed strips of tin at the foot of the marks where the enamel was beginning to wear away. The pole ought, we thought, to last out the remaining eleven days of the period of observations if only the wind blew no more ice around it.

Before retiring to bed I prepared a new set of cards recording the position of the observation penguin nests. The cards were made to slide into a map-case fitted with a celluloid front which hung round the neck and kept the cards clean and prevented them from being blown away. In all, there were forty-six nests under observation.

As the penguins grew accustomed to us, they became quite captivating. This entry is typical of many in my diary:

> Sarah at the screen gradually becomes tamer. We can stroke her now and she appears to enjoy it. She will take stones from our fingers with her beak. She shares in turn with her husband the task of covering the eggs. He is a little more timid than she, but does not desert his nest when we approach. Often as we stand at the screen we feel them give a gentle nibble at our heels or trouser-legs to remind us that they are at home.

On making my usual penguin round on the 7th I was pleased to find only one casualty amongst the eggs. I broke up one homestead because the occupiers were far

too negligent with their egg; they were actually only foster-parents. The egg joined the collection which I was gradually making and its contents helped to form an omelette. It was distressing to see eggs lying about neglected, in the filth and slime. The Ringed Penguins' eggs seemed either to disappear completely or else were abandoned when they sank through the snow, but on the whole this species is more plucky about protecting its eggs and often covers an egg which, under similar conditions, a Gentoo would desert. Circular cigarette tins came in most handy for packing up the eggs; they were ideal in size, and the eggs fitted them snugly with the addition of a little paper packing composed of old labels from milk tins, pemmican tins, etc. We had thrown away nothing in the way of paper, and our forethought proved useful.

By this time we were having to economize with candles as much as we possibly could. The bag in which we kept candle-ends was carefully searched for the larger pieces. We did not relish the idea of living in the hut with no light other than blubber lamps, like the Esquimaux.

The two-hourly meteorological observations developed into lengthy affairs. As well as reading the tide-pole, noting the temperatures, weather conditions and set of the current, we watched the movements of the ice in the main channel and into Andvord Bay. We also kept track of icebergs to see in which direction they went.

Every now and then the fire played us up; on one memorable afternoon, Lester, whose watch it was,

found that it had nearly gone out, so before setting forth to take his observations he poked it, added a few knobs of coal, and uttered a prayer. When he returned he found a roaring furnace and the temperature in the hut up to 94·0° F. When I got up just before 5 p.m. the kitchen was still like an oven. As there was no window we could only sit and perspire, but luckily the temperature was falling. The usual thing happened and we were nearly freezing that evening and longed for a little of the excessive warmth of the afternoon. The fire still wasted valuable time, though since the bottom fell out and was replaced with three ice-pick heads which we inserted in holes in the side to serve as fire-bars, it gave much less trouble. Wearing out was not peculiar to the bottom of the fire-bucket only; most of our clothing, furniture, dog-tethers and, in fact, nearly all our effects, were approaching their end.

For supper on the 10th we had a three-egg omelette. We were sentimental about the eggs and could never collect them, except for scientific purposes, from nests where they had a good chance of survival. When, however, we found eggs in the mud or lying totally neglected, it was better to take them for specimens than to leave them to the gulls. During night watches we usually indulged in an omelette and a cup of tea.

On the 11th we made another slight alteration in routine. The one who turned in during the afternoon was to do so before 1 p.m. so that he had a clear sleep until half-past four; before, he did not get to bed until about a quarter to two, after taking observations, entering up logs and attending to the fire. Lester had a good

three hours' sleep the first afternoon and I the same the following day. We both needed the extra hour, for we had been having barely six hours of sleep at night, in fact, more often only about five and a half hours.

Two or three bad days with intermittent snow and high temperatures made the rookeries in a hopeless state:

We can often see eggs floating in pools of water or embedded in mud—sites which were at one time nests, but which have since been deserted by the despondent parents. Eggs lie about neglected, having rolled out from nests owing to the carelessness or quarrelsome habits of their owners who are often fighting with their neighbours. An encroachment of half an inch worries them very much more than the loss of their eggs. Some nests are in a sad state. Many birds have melted holes in the snow with their warm bodies so that they are sitting almost upright on their nests. In some cases they keep their flippers extended so that they can scramble out of the hole. Others get right down into the holes and only the tops of their beaks show above the snow level. When we can we help them. In normal circumstances the penguins are able to keep their eggs snug and warm in a kind of pouch which extends down the front of the bird, and stretches open to take the eggs, then closes round them and presses them against the warm body.

To watch the penguins' habits was a continual pleasure, even though it involved a great deal of note-writing on returning to the hut. Notes were normally first made in pencil in the field-book and then written up carefully immediately afterwards in the log-books.

The thieving instincts of these delightful creatures were a never-ending source of amusement to us. Every penguin—it is safe to generalize—is an accomplished and

experienced thief. The penguin greatly prefers to steal stones from the nest of a neighbour than to make an arduous journey to the shore for them. The sight of a stone must provoke the same evil feeling in a penguin that a bulging wallet of treasury-notes does in a pick-pocket, the only difference being that the pickpocket does his job as secretly as possible, whereas the penguin is quite blatant about his.

By 15 December we were approaching the end of really hard work. I wrote in my diary for that day:

> We are gradually bringing the tidal observations to a close and the tide, ice and wind are all doing their best to give us a good parting farewell. A nor'-wester, which has been blowing merrily, has steered a large quantity of ice round the pole, which makes it difficult at times to obtain a reading. Whenever ice and the tide-pole are in conjunction there is cause to fear for the latter's safety. We were not unjustified in our apprehension. At 8 p.m. a small berg on the West Rocks calved and caused a considerable swell which made the ice jump about around the pole; too roughly, alas, for it knocked the unfortunate pole over on one side. In order to complete the thirtieth day we are having to read from angles and provided the pole remains steady we shall be able to manage until we straighten it tomorrow.

We obtained readings from the tide-pole successfully next day and the angle remained constant for the first seven hours. It changed twice as the tide fell in the morning. At 11 a.m. we were able to straighten it ready for the noon reading. That night at 8 o'clock we completed the thirty days' observations, and could look forward to a change of work and the sleep of which we were both badly in need.

Chapter XII

RELIEF, AND THEN NANSEN ISLAND

On Sunday 18 December, while Lester was finishing the cleaning which he had left over from Saturday when he did not feel very well, I walked over to Coal Point, along the shore, to collect some penguin eggs. Looking up, I saw to my surprise and delight a ship in the distance. I stared hard at it to make quite certain that it was indeed a ship and not one of the imaginary ones we had often seen and which always turned out to be icebergs, and then pelted back to the hut to tell Lester. Excitedly we watched through the binoculars as it drew closer until we could read the name. It was the *Graham*, one of the *Svend Foyn's* catchers. We hurried through our work and prepared for their arrival. In a way we almost dreaded it; we had that numb feeling of apprehension that there might be bad news from home after so long a time. We hoisted the flag and when the catcher was near the Island were able to recognize Captain O. Andersen and Mr A. G. Bennett, the government magistrate. Impatiently we watched them while they launched the life-boat until they reached shore, and we were able to shake hands with Captain Andersen of the *Svend Foyn I*, Captain Hansen of the *Thor I*, Captain Skidsmo of the *Graham* and Mr Bennett. Such handshakes, they almost conveyed our

21. *Relief*

(*Left to right*) *Captain Vermeli Hansen of* 'Thor I', *Lester*, *Captain Andersen of* 'Svend Foyn I', *Bagshawe*, *Captain Skidsmo of* 'Graham'

joyous feelings, and to our relief and happiness we were told that all was well at home.

Captain Andersen had gone to all the trouble of making a special trip from Deception Island to see if we were safe and well. He was just like a father to us and was as happy as our own people would have been to see us in better health than he could possibly have anticipated. Their generosity was fine, and we felt it difficult indeed to tell them how deeply we appreciated their help, voluntarily and whole-heartedly given.

They arrived with the idea that they could take us away there and then, but they soon understood that we had many things to clear up and that we could not leave immediately. We discussed the matter and after they had told us all they knew of news from home they agreed to pick us up in two or three weeks' time, together with any of the gear that we wished to take away. They very kindly took the dogs back with them to Deception Island, thus relieving us of a considerable burden, obviating the necessity of killing more seals to feed them. They hoped to find them homes in the ships.

The catcher arrived off shore at 3 p.m. and after our visitors had spent some time on land talking and drinking our health we went on board and had several cups of coffee and some bread. The food tasted wonderful to us, and we asked them to leave us a small supply of eatables. This they did in no mean measure, giving us enough to equip a small expedition and almost stripping the ship. There were such luxuries as a crate of potatoes, onions, a great tin of butter, sausages, cheese, and tins of milk, sardines, crab and pine-apple. They also brought

us fresh meat in the shape of a whole sheep carcase which we sat and contemplated afterwards wondering where to start on it.

Among other things we heard that Cope had been unable to procure a ship and that at one time there had been very little chance of the whalers getting back to us on account of difficulty they had had of selling the previous year's oil. We should have felt exceedingly uneasy had we known of the worries caused to those at home, and the doubts about our relief. We learned, too, of the kindness of Sir Ernest Shackleton, who had promised to do his best to relieve us in the *Quest* if the whalers had been unable to do so. We felt that we should never be able to repay the debt of gratitude we owed to Captain Andersen and the owners of the *Svend Foyn I.*

The *Graham* proposed to go on to Nansen Island to look for a supply of water. If this were found, the *Svend Foyn I* and *Thor I* would follow. They promised to send off wireless messages for us when they returned to Deception Island; we thought that the messages would get through as another factory would be about half-way between the Falklands and Deception Island and would be able to relay them.

After the catcher had departed we had a preliminary glance through the mail and then started to put things in order. For supper, Lester cooked some potato 'chips', which were followed by tinned pine-apple with milk. We thoroughly enjoyed ourselves and had much to talk about. After supper we went to the lounge to read our letters until the early hours of the morning, then to bed, tired out, but happy.

We did not rise till rather late next day, but as we had decided to take a day off to bring notes and diaries up to date before beginning to pack seriously, it did not matter very much. We had already packed a certain amount of scientific material, but there was still a large quantity of equipment to be prepared for transport.

After breakfast I set off for Coal Point to collect a panful of Ringed Penguins' eggs and, when I got back, after a pleasant walk in the sunshine, blew ten of the eggs for specimens. We had a treat for tea—a small tin of sardines with bread and margarine. For supper we had decided to have mutton chops with fried potatoes. While I was preparing the potatoes, Lester amputated some chops from the sheep, not very successfully. As the frying-pan was not large enough, we tried to fry the potatoes in a saucepan, but eventually transferred them to the lid of a large cooking-pot. Unfortunately the primus stove stood at a tilt, and was unsteady into the bargain. This had the effect of heating one half of the chop while the other remained cold, and before the chops were done, some of the chips began to burn. The chops were so long and overhung the plates so considerably that we were forced to eat them with our fingers. By the time we sat down to table the potatoes were nearly cold. This attempt to cook chops and chipped potatoes could not be described as an unqualified success, but failure was mainly due to lack of a frying-pan of suitable dimensions.

Waking promptly was rather difficult, for the alarum clock would not work; consequently we overslept once more. We had a good day packing, however, but the

task was made none too easy by the absence of nails other than those which we could extract from boxes, and by the lack of pieces of wood suitable for making into lids to the boxes. As we filled the various cases, we marked them with a shipping mark and stowed them away in the tent.

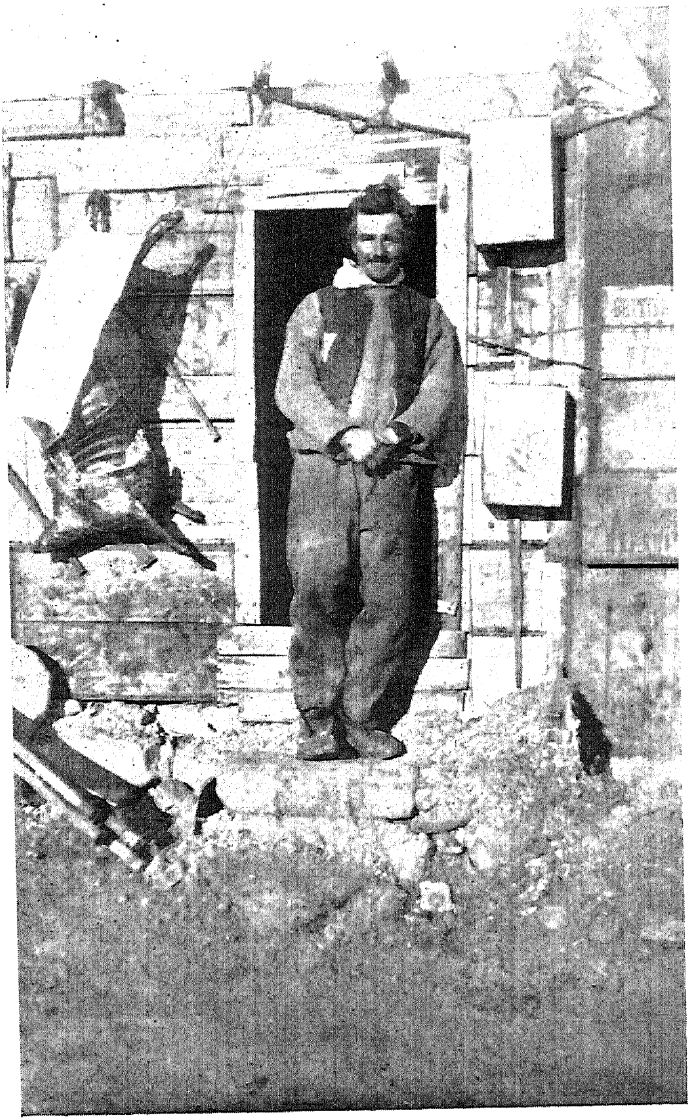
Before supper I blew some eggs, primarily for food, and incidentally for specimens. The Gentoos' were all right, but when I came to the Ringed, of which I wanted three to complete my collection, I got more than I bargained for, and had to blow eight. The first five all contained young birds in various stages of development, and I felt as if I should be blowing eggs till doomsday; at the best they take a fair time to empty.

Days of tiresome packing followed. I was never a great lover of packing, even under ideal conditions, and our conditions were anything but ideal. The tent would hold only a small proportion of the boxes and gear, so we placed in it such boxes and articles as would suffer if exposed to the weather, the remainder being deposited in an ever-increasing heap outside the hut. The size of this heap became almost alarming. We felt thoroughly exhausted at the end of each day's work and were heartily glad when the packing was finished.

The high-class fare demanded more than the capabilities of the primus could supply, and the stove had to be repaired once more. But we had not beaten it and it was soon hissing away as merrily as ever. The stove stood up to its hard work in a really wonderful way.[1]

Paradise Bay (mockery of a name!) gave us its typical

[1] It is still (1939) unconquerable. I often find a use for it even now.



22. *After relief—content. Lester at the hut door*

weather on the important occasion of Midsummer Day. Bitterly cold and damp, low clouds covered the whole sky and gave us not a single glimpse of the sun. The fire made us even more dispirited when it refused to burn at breakfast time, and when shortly after starting it, Lester upset a pannikin of hot pemmican over his trousers, his seat, and the floor, we felt very injured. We had always congratulated ourselves for not upsetting this greasy stuff, although on a few occasions we had had narrow escapes.

Lester had the inspiration of preparing a Welsh rarebit for supper to be eaten after the omelette and helped down with a raw onion. Small and innocent in appearance, the onions which the whalers had given us were the most potent we had ever tasted. They were guaranteed to make the strongest men weep, and we not only dissolved into tears but perspired copiously as well.

On Christmas Eve, as we sat playing carols on the gramophone after a hard day's work, I wrote:

There is an unmistakable feeling of Christmas in the air. We should be glad if we were home with our people and had all the comforts and enjoyments that Christmas brings. The Christmas that we spent last year in the whale factory remains impressed on our memories. It would do some Scrooges at home good to be down here for a year to learn how to appreciate Christmas and to realize what it means to people in these far-off parts of the world.

CHRISTMAS DAY. We felt tired out when we woke at 8 o'clock, and had only enough energy to wish each other and those at home a Merry Christmas before we fell asleep again. We got up at half-past nine. Even

though it was Christmas Day we kept on with the packing. We finished work late in the evening and it was not until 9 o'clock that we sat down to a Christmas meal of:

Omelette of penguin eggs with bread and butter.
Tinned pine-apple.
Currant bread.
Tea.
A *crème de menthe* sweet.
A tot of Burgundy.
Cigars (but no time to smoke them).

It was a good supper, but what is Christmas without a Christmas pudding?

The weather treated the festival with respect; it was fine, with a maximum temperature of 50·0° F., the highest reading we had had during the summer until then, and a minimum reading of 29·0° F.

After Christmas the weather changed for the worse, but we had to proceed with the work. The poor old tide-pole was brought to the hut. We could not bear to leave this emblem of trial and tribulation to an undignified end on the shore. We tackled the tent and by dint of much hard work pulled up the floor-cloth and the inner lining which were embedded in ice. We could not move the tent itself, for a thick slab of ice covered the rocks which lay on the skirting all around it, so we lashed up the door securely.

At last we were free to do further scientific work, and on 1 January 1922, began the New Year well by not getting to bed until 4 a.m. We washed our hands and

faces before turning in, making it a red letter day, and began the year moderately clean. Both of us still had various jobs to do. In between other tasks I managed to complete a plane-table survey of the immediate neighbourhood, but was hindered on numerous occasions by joggings from inconsiderate penguins.

We noticed that water was trickling from the base of the glacier on the east side of Glacier Bay. We had always found this a good source of drinking-water at the right time of year, but we had been collecting snow for drinking-water from near the tent for some time; there were no penguins there and the snow was pure and fresh.

After tea on the 4th I wandered over to South Island and searched for all the observation Ringed Penguins. There were four nests in which the eggs were on the point of hatching and a chick was pecking its way through one egg. At Coal Point I found one chick hatched and heard two more chirruping. There were no signs of any of the Gentoo eggs hatching. The Gentoos spent more time talking about their eggs than sitting on them and keeping them warm.

There had been less thawing, but a heavy fall of snow and hail lasted for a while on the 5th. A glacier fall at Lemaire Island caused a swell which reached the bow of the water-boat.

The first Gentoo chicks were hatched on the 8th. I could only find three, including one belonging to Sarah at the meteorological screen. Sarah had taken thirty-five days to hatch her first egg. She and her husband were model parents; they gave their eggs such

attention that they ought to have created a record time for incubation.

We waited patiently for the whalers and managed to do various jobs because they left us longer than we had expected. We were able to dismantle the tent, dry it as much as possible and stow it away.

Wonder of wonders! The 10th was a magnificent day and pleasantly warm. Up went our spirits with a bound and with renewed energy we did quite a lot of work. Lester was very pleased when he secured some satisfactory sights for latitude and longitude, and we also took many more photographs.

Having completed all the work we had set ourselves to do before the arrival of the whalers we ate the last half of the remaining *crème de menthe* sweet at supper. Lester had a firm conviction that the whalers would return the day after we ate it, so we kept it in reserve until we were ready for them. So convincing was Lester that I fully expected to see the whalers the following day, but they disappointed us. It was not until we had waited through three more days of wretched weather that they arrived.

At about a quarter to nine on the evening of the 13th, Lester, who was cook, had just poured out the tea when we were startled by the sound of a ship's horn. At last the time had arrived for departure from the hut which had been our home for exactly a year. Much as we had upbraided the climate, we felt lumps rising in our throats, for we had grown strangely fond of the old hut and the inhospitable island. We had a special affection for the hut, for we had built the greater part of it ourselves. It seemed like desertion to leave it to its loneliness. Perhaps

23. *After relief—Bagshawe looks happy too*

in the cold, silent days of winter, the old fire-bucket, time and again the cause of trouble to us, would repent, too late, its past tantrums. We wondered if Sarah and the other penguins would miss us. They had been our friends and we knew that we should miss them. Who would be the next visitor to this place, the picture of which would forever remain imprinted on our minds? It had been an experience which, though I would not particularly care to repeat, yet I would not have missed for worlds. Perhaps no two young men had ever had a year of such isolation. We were pleased with the work we had carried out, for we felt that we had at least done the best which circumstances permitted. We might have done a great deal more had the four of us kept together, but that could not be rectified.

The hard work which preceded our departure did a good deal to stop us from thinking too much about leaving. The catcher *Graham* had been selected to take us back. Captain Andersen was again on board and while the people on the catcher were preparing to come ashore we made the best possible speed to complete as many of the necessary preparations for departure as we could. The untasted tea was unceremoniously cast away, so too were the contents of the water-pans, slop pail and so on. The fire-bucket we left laid ready for the next people who decided to try their luck at Water-Boat Point!

I met Captain Andersen when he arrived on shore in the pram and told him that we were ready to go. Lester put everything loose into the water-boat, our old bed-room and store, with such fearful thoroughness that not even a rag could be found when he had finished. He

then nailed down the hatchway cover, while I checked the gear as it was being loaded into the life-boat. There was no panic this time as there had been when we arrived. After a last survey of the hut we nailed the kitchen door in place and tacked a canvas cover over it. Then the front door of the outer hut was nailed up firmly with battens and we made our way out of the hut by way of the coal-hole which we closed behind us with a small wooden door.

We were soon on board and as we sailed bade good-bye and good luck to our former home. Lester seemed quite upset, and we both felt miserable as we watched the hut disappear from sight, left to the mercies of the wind and weather. We had had pleasant times there as well as dull ones, and it had been our protector against the weather and even against death. It was to us a haven of comfort, the only place of refuge on a bad day. The sky was overcast and rain fell incessantly as we slid away, so that the climate of Water-Boat Point left us with a characteristic impression as we parted.

Until we arrived at Nansen Island at about 3.30 a.m. on the 14th, we spent the time either sitting in the cabin or pacing the deck. Bad weather hid most of the view. We learnt that they were late in arriving because they had lost their way and they were also hindered from coming before by the bad ice conditions.

Once on board the *Svend Foyn I* we soon had all our belongings packed away in a large cabin amidships which the captain had arranged for us. The chief officer, the steward, and the second engineer greeted us warmly; meeting them again seemed to reduce our time away

until we felt that it was only a short while ago since we were saying good-bye to them. We were too excited to sleep much before breakfast. We opened three cases of presents which had been sent to us from England and found in them many delightful surprises which the kindly thought of those at home had provided for our comfort. Then, too, there were more letters, which we read eagerly.

After breakfast we began to put the cases and packages in order. We also shaved, bathed and had our hair cut by the steward. At long last we looked respectable again. A rapid transformation; it is curious how quickly one can change from a disreputable tramp to a presentable person. To judge by the steward's manner we must have been extremely dirty. We may even have smelt. I could not tell by sniffing at Lester, for it is difficult to tell whether another person is odiferous when one is no better oneself, and long association with a penguin rookery tends to blur the finer discriminations of one's nasal organs. It was strange to live a life almost of luxury once more, to sleep in bunks, to dress more or less conventionally, to talk to other men and to eat good and varied meals, but we missed our old friends the penguins very badly and there were no rookeries near us that we could visit.

Some novels which were among the things in the cases sent from home helped to compensate us. I was at the moment reading one of Dumas' works. We enjoyed this type of book; light novels were unreal and gave us very little amusement out here.

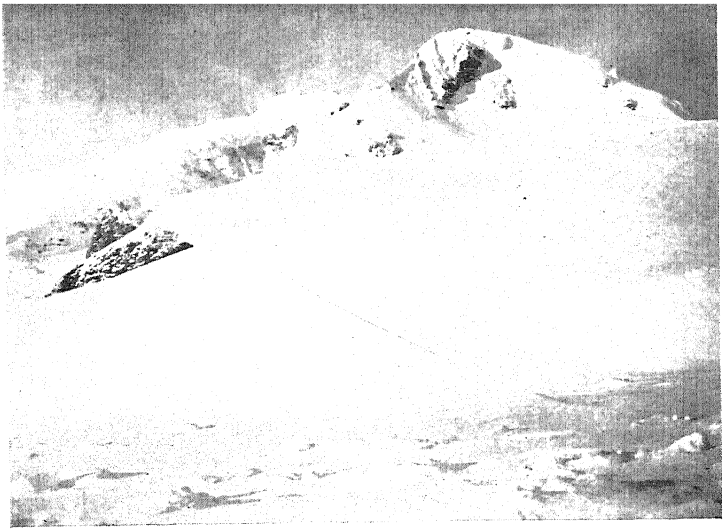
The *Solstreif* (Captain Björnaes Hansen) was sighted

during the evening of the 16th. She had made an attempt to reach Port Lockroy, but was unsuccessful owing to bad ice conditions. Captain Larsen on the *Falk* was at Mikkelsen Harbour, Trinity Island. The *Thor I* was with us at Nansen Island. The *Pythia* (Captain Andersen) lay near, behind one of the islands. The *Bombay*, which had come down the season before, had been sold and the *Falk* had come in her place. Captain Johanssen, who used to be the captain of the *Bombay*, commanded the *Ørn II* in succession to Captain Larsen who had taken over the *Falk*. The *Gouvernor* ran aground at the Falklands on her way down, and had in consequence abruptly ended her whaling days. All the ships had suffered some slight damage from ice when making for Deception Island. The *Falk* had a hole in the fore-peak, the *Ronald* (Captain Öre) one in the bow.

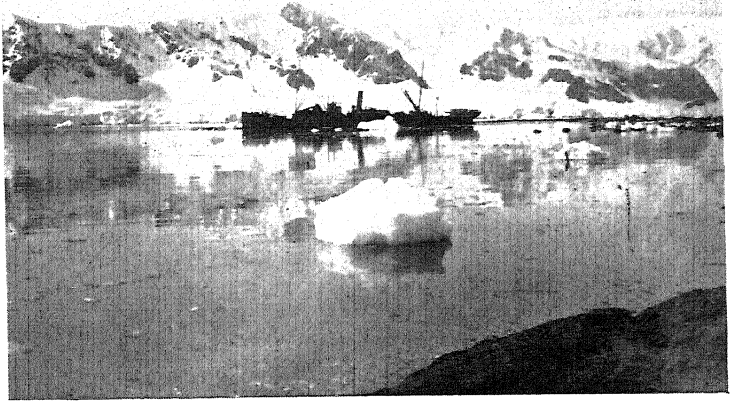
The *Svend Foyn I* had collected about 12,000 barrels of oil and this was considered very satisfactory.

Soon after breakfast on the 21st, Captain Andersen asked us to go out with him in his small motor boat to shoot shags, an invitation which we were glad to accept, for we hoped to secure geological specimens as well. We picked up Captain Vermeli Hansen of the *Thor I* after we had collided with his motor boat and nearly had our own engine put out of action by the deluge of water which resulted from the impact. Later we met Captain Björnaes Hansen of the *Solstreif* who also joined the party which was already weighty for a small boat. However, all went well and we had a good deal of enjoyment, though many shots went astray.

After lunch we went out again, with a pram in tow,



24. *Mount Lunch Ho!*



25. *The whaling harbour at Nansen Island*

this time on a more extensive and serious excursion. Skirting round the north and west shores of the two islands bearing the joint name of Nansen Island, we steered for Saddle Island. The latter is so named because of the resemblance of its contour to a saddle. It has a peak at either end with a depression between them. Cope, Wilkins and Lester had spent a night on this island on their way to Nansen Island the year before. We landed and I was able to secure a few rock specimens. We found a small rookery of Ringed Penguins and a few shags' nests. We then made for a very small island to the east and quite close to Saddle Island, then to a third, a little larger, and landed on both. Finally, we visited Pilseneer Island which lies to the south of Wilhelmina Bay, and returned home round the south and east coasts of Nansen Island. The captain was well pleased with the bag of some sixty or so shags. How we survived the journey without a ducking is a miracle. A Norwegian pram is none too easy to get in and out of, especially when the rocks are slippery.

26 January was Mr Bennett's birthday; the ships had their flags flying and on board his ship (the *Solstreif*) we had special festivities. Dinner, for one must call the sumptuous meal by a more dignified name than supper, was served in great style. Wine and liqueur glasses, paper table-napkins, all sorts of foods, delicately and daintily served, and excellent beer, contrived to make us feel as though we were miles away; but we were brought back to earth with a bump after a glance through a port-hole by the sight of distant glaciers. We became merrier as the evening passed, helped by numerous 'skåls'. The

word 'skål' makes a continual excuse for drinking whenever one feels inclined and is liberally used. If you want a drink you raise a glass and call 'Skål! Captain—', and the compliment is returned immediately; so you work round the whole company. It is preferable to drinking in silence. A casual fingering of one's glass during conversation would sometimes accidentally provoke a series of 'skåls', and be almost embarrassing.

Although we felt the effects of the night's dissipation to some extent, we started work next day on a survey of the islands. This was to be Lester's job, while I collected geological specimens.

Whaling was exceedingly slack at that time. All the factories had finished their catches, but the whales were apparently keeping to the open sea off the Palmer Archipelago and had not generally entered the De Gerlache Strait. The dearth was so serious that the *Scott*, one of our catchers, ventured about thirty miles into the open sea off Brabant Island, but, although whales were heard, they caught none owing to fog and rough sea.

After eight days of indifferent weather and fairly heavy snow-fall, we were not sorry on 30 January to have a sunny day for a change. On that morning the captain again took us out in the motor boat, on a trip which was originally intended to be a short one but which eventually developed into quite a lengthy excursion, lasting from breakfast time until 4 o'clock in the afternoon. He allowed us to land practically wherever we wanted, enabling me to make many additions to my rock collections. The weather was so fine that it was almost like a pleasure outing on an English river. There was

very little ice about and we could see only a few icebergs in De Gerlache Strait.

We landed at five places on South Nansen Island and at one, facing the Strait, on North Nansen Island. As there was still enough benzene left in the tank, we were taken over to Cape Reclus and made a landing there. It is a high promontory with a fairly easy ascent to the top up the talus and rock. There was a small Ringed Penguin rookery and also a colony of shags, the young of the latter being well advanced, though still in their down. The return journey to the ship was in the face of a cold breeze, so it was not so comfortable as the outward voyage and we were glad to get back to the warmth of the ship.

The following morning the catcher *Scott* had a narrow escape when, somehow or other, she ran into an iceberg in broad daylight, but fortunately she damaged only the fo'c's'le rail and hawse-pipe, which were repaired the next day.

Whale-catching was still very slow. I noted on 4 February that that and the previous days' total for our ship was only one Fin Whale. Heavy snow-fall did not improve the situation. The bad weather and scarcity of whales made everybody restless. By the 5th we had caught four whales, but we could not work on them until the following day for the boilers were idle—an unusual condition.

Three out of the five young pigs we kept on board met their fate that day; probably because of the need to take it out of something or other. As a result of the slaughter we had meals of pork in various guises—

a change from the salt meat which I disliked and to which I could never get accustomed.

On the 8th, Mr Bennett and I borrowed the large pram and went for a row to collect specimens. He shot about a dozen Wilson's Petrels, a Brown Skua and a Gentoo Penguin, all of which he intended to skin, for he was a keen taxidermist. We also used his drag-net some half-a-dozen times and collected a bucketful of miscellaneous specimens which included seaweeds, small fish, sea-urchins, starfish, shells, worms and many Euphausids. It took us the rest of the evening to sort it all out.

As a strong breeze from the south had sprung up, I had a stiff pull from the *Solstreif* back to the *Svend Foyn I* at night. A pram requires a good deal of pulling in a wind, and the steward, who was watching my return, almost decided to come out in the small pram to give me a hand.

Soon after breakfast on the 11th, the catcher *Hanken*, which belonged to the factory *Falk*, appeared; she was on her way to the Schollaert Channel to look at the whaling prospects there near Larvik Harbour on Anvers Island. The *Falk* was at Deception Island and as the *Hanken* was returning there, Mr Bennett proposed to go back with her. Captain Larsen promised to be back from Larvik Harbour about two or three o'clock in the afternoon, but eventually arrived at supper-time, and did not leave until midnight. As we waited to see them off, we looked a sorry lot. Mr Bennett had neuralgia and toothache, Lester neuralgia and I chronic toothache. Mr Bennett had anointed his own and my teeth with various chemicals without avail. We were sorry to say

good-bye to him. The whalers were very kind, but it was a change to talk now and again to one of our own countrymen. His departure kept us to the ship more than ever, for we had no one to visit when we felt fed up with the weather and our own company.

No whales were brought in to the factory on the 14th, so there was practically no work done on board. Conditions were not much better the following day although in the evening one of the catchers brought in a small Blue Whale. We had 16,300 barrels of oil, but there were still about 8000 more to be secured in order to complete the cargo.

15 February was the last of five consecutive days of almost continuous bad weather when either snow, sleet or rain fell. Lester and I spent the time reading, writing, and sleeping, lamenting the weather between whiles. Many games of patience were played in the saloon, for it was a favourite recreation among the officers.

We saw a Leopard Seal near the shore devouring a choice morsel of whale guts. We had never admired these animals, but we thought even less of them after seeing to what low depths their tastes would sink. One would have thought that a nice, plump, fresh, little penguin would have made a much more palatable meal.

According to wireless reports they were having very bad weather at Deception Island, even worse than ours. A strong north-east wind had kept the catchers in harbour from 10 until 14 February. Luckily we missed the wind at Nansen Island.

An annoying thing occurred. There had been a

continuous stream of water running down the side of the glacier near the ship, and this, by means of a hose-pipe, had been diverted to the ship, thus providing the ample water-supply so necessary for the operations of the whaling factories which use large quantities in the boilers and for other purposes. Unfortunately, the course of this convenient stream changed and three blastings in the glacier face failed to turn it back, so we had to obtain supplies of water from another source. In former seasons the stream had provided enough water to last the ship throughout the whole period of her stay at Nansen Island.

Whaling was still poor on the 18th. There was no work done on the factory that day, but the *Selvik* brought home one whale in the evening. It had been snowing for two days.

One day we borrowed a pram belonging to a visitor from another ship and rowed around for a while. We collected a few geological specimens from a decidedly unhealthy spot at the base of a glacier, the face of which rose sheer about 150 feet high. We inspected two or three places at the base, and almost immediately after we had pulled away a large lump of ice fell very near the spot we had just left. We were fortunate enough to obtain some loose pieces of rock from the exposures, thus avoiding the necessity of chipping with a geological hammer, a performance which sets up a sort of echo and often results in the dislodging of fragments of ice from the glacier face.

We even erected the tide-pole, which had been reconditioned, on shore near the ship, as we wanted to

secure a short series of readings. Fixing it in position was an unpleasant job on account of the filthy water which hid the bottom; and the rocks with which we filled the barrel were greasy and slippery to handle. Later, we were forced to re-erect the pole in deeper water, but we made a better job of it, for the water was clearer.

All day on the 22nd we were at work outside, Lester surveying and I collecting geological specimens; we used a pram to get from one spot to another. At the south-west point of North Nansen Island there are two small islands close together almost joining the main island. It was from the glacier slope there that the *Thor I* and the *Solstreif* obtained their water-supply.

The *Selvik* came alongside for repairs. I had a talk with the mate, who told me that the season had been an exceptionally bad one and that up to that time his ship had caught only seventy-nine whales. The previous year, which was a good season, they killed two hundred. They had found their whales mostly round Two Hummocks Island, though sometimes they went as far north as Smith and Low Islands.

After lunch on the 23rd we intended to go for a long row, taking some food with us. We pulled over to the shore of North Nansen Island, skirting along it towards the south-east point of the island. There were numerous glacier falls as we rowed along and we were careful to steer clear of the glacier after we had examined one or two rock exposures. Arriving at the *Pythia's* mooring, we met another Captain Andersen who invited us to coffee. Before going aboard we had a look at the *Gouvernoren* wreck. This factory was burnt out in 1916

and in order to put the fire out she had been sunk by two harpoons discharged into her from a catcher. Only the fore-peak remained above water. It looked a pathetic, depressing sight—once a ship vibrant with life and motion, now a helpless mass of rusting steel.

The harbour in which the *Pythia* lay is probably the best in the South Shetlands whaling area. Water was obtainable near the ship. We stayed on board until midnight, talking, smoking and listening to the gramophone. Our host was a most charming man; he spoke English well and had a stock of good yarns. The ship herself was not the usual type of whaling factory; before conversion she had belonged to the Raglan Castle Line and carried seventy or eighty first-class passengers. Her large saloon, a remnant of her former glory, made a rather odd dining-hall. On returning to the *Svend Foyn I* we found that our own captain had been a little worried at our long absence and had feared danger to us from glacier falls and small bergs, but fortunately he had wirelessed to the *Pythia* and put his mind at rest.

There had been a sudden abundance of Fin Whales round Liège, Intercurrence, Low and Tower Hill Islands, which had kept the factories better supplied. On the 24th our catchers brought in fifteen Fin Whales, the result of their previous day's catch.

At midnight on the 24th we commenced the series of tidal observations which were to extend over three days and nights. As the nights were dark, we had to take a lantern when we rowed over to the tide-pole, a venturesome journey, for to board the pram we had to go over the ship's side and down a filthy, slippery ladder, an

ordeal, even in daylight. Our mittens were saturated with oil and made matters worse. A good wash was necessary after each trip.

As the wind was very bad, Lester was forced to call me at midnight on the third day, after I had had two hours' sleep, and we took the observations for the next three hours together, taking it in turns to row the boat and read the pole with the help of the lantern. At the 1 o'clock observation we had some difficulty in finding the pole. At first we thought that a whale carcase had floated on top of it, but eventually we discovered it, safe and sound. Lester waited up until 4 a.m. in case I had any troubles. At 8 a.m. we finished the series.

The tides at Nansen Island behaved peculiarly. Instead of a very high tide succeeded by a very low one, there was a very low tide, then a not very high one, followed by a low tide not falling as low as the previous one and then a higher high tide. For example, the lowest tide registered at the beginning of the observations showed about 0 feet on the pole, while the high one read 3 feet 6 inches. Later the low tide read about 6 inches and the high one about 4 feet 6 inches. At Water-Boat Point there would probably have been a difference of about 6 feet between the two tide-levels.

During the course of our travels in the pram we visited the south-west point of North Nansen Island, from which there is a view of Brabant Island with its mountains, Mt Bulcke and Mt Parry (about 6260 feet), with Cuppel (Dome or Cupola) Island[1] in the foreground. I made a few sketches of the landmarks. On

[1] Called on the Admiralty Chart, Delaite Island.

one of the islands we saw four Weddell Seals, and also a Crabeater on a floe near the ship.

One of the catchers of the factory *Neko* (Captain Sinclair) came to the *Solstreif* on 1 March for coal. The *Neko*, which was in the Schollaert Channel, had only 11,000 barrels of oil and had run short of coal. They had sent out wireless messages the previous evening to ascertain whether the other factories had any to spare. This particular ship had a capacity of about 20,000 barrels.

It was the second officer's birthday, and in the evening most of the ship's company visited his cabin to deliver presents. Their gifts were varied and original—a violin made from a cigar box, complete with case, bow and music; a whistle made from a piece of brass curtain rod; a steel triangle; cigars; pipes; tobacco; a looking-glass and a half-dollar note, the latter making a whole dollar when reflected in the afore-mentioned looking-glass. We gave him some cigarettes, sweets, cake and chewing gum. The inspection and exhibition of presents was the occasion for a good deal of laughter and jollity.

We heard that the *Minerva*, one of *Pythia's* catchers, went on the rocks in Sandefjord Inlet[1] during the night of 1 March. She was drifting in the dark and hit the rocks and soon became a total wreck, completely beyond repair. The crew landed on a small island where they had to remain for six hours before they were rescued by the *Eik*, one of the *Solstreif's* catchers. Such risks are run daily by these hardy whalers.

Some of the factories were running short of coal. As I

[1] Called Orleans Channel on the Admiralty Chart.

have mentioned, the *Neko* was drawing supplies from the *Solstreif*, the *Thor I* had started taking coal from us, and the *Pythia* from the *Falk*.

The *Graham* arrived in harbour at night during a thick fog, guided by the factory's siren. We planned to go with her on a trip after she had had her boilers cleaned and had taken in coal.

Chapter XIII

WHALING IN DE GERLACHE STRAIT

At 4 a.m. on 4 March the night-watchman roused us and, as we had already packed our belongings in rucksacks, we were soon on board the *Graham*. We got under way half-an-hour later, and headed N.N.E. up De Gerlache Strait in the face of a very strong wind and in a rough sea. A heavy snow-fall made the thoroughly bad weather even worse and did not permit us to see much. For a while we sat on the lee side of the chart-house, feeling uncomfortable inside, but later we turned in, Lester on the settee and I in the captain's bunk. When, after a restless night, we got up for breakfast we found that we were drifting to the lee of Cape Murray, owing to the thick weather.

After lunch we continued our course up the Strait and by half-past three had Two Hummocks Island to starboard and Liège Island to port. Liège Island, as seen from De Gerlache Strait, is quite unlike any other in the area we visited. There are no prominent rock patches such as are present on the other large islands; it is much whiter and where the patches occur on the higher ground, they are only small and indistinct. Near the shore, along the face of the glacier, a few very small rock patches are visible.

After coffee, we watched the chase of a fairly large Blue Whale which lasted until the whale started to 'run'

north, when we gave it up. The captain thought that one of the other two catchers near us had been hunting it. The *Ross*, one of the *Ronald's* catchers from Deception Island, had flagged a Fin Whale which she had just caught. The weather cleared up in the afternoon.

At one time we saw about fifty Humpback Whales which, unlike the previous year, the whalers were not allowed to kill. It was thought that they might become exterminated unless given a respite from hunting. During the previous season this ship caught only four of them, but hundreds were about during their present whaling season, in fact the captain said he had never seen so many before. Perhaps some instinct told them that they were safe and had no reason to keep away from the whalers. When the Humpback Whales dive, they can be distinguished by the fact that their tails stick up out of the water, and also the intake of breath is very loud. The Blue Whale sometimes raises its tail out of water, but in this species the tail is much sharper and more pointed than that of the Humpback. Humpback Whales give very good blubber.

Some indication of the paucity of whales may be gathered from the fact that the *Graham's* total bag the previous year was 208 compared with the 120 captured up to 4 March.

We spent the remainder of the day between Two Hummocks Island and Liège Island, drifting during the evening and night.

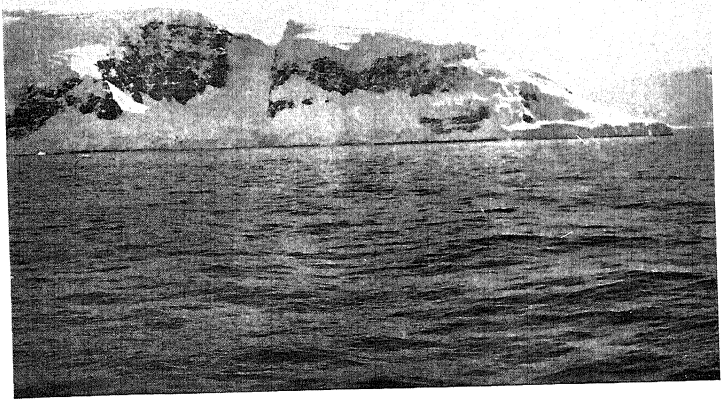
After a fair sleep, during which Lester rested on the settee in the captain's cabin and I in the saloon, we awoke on the 5th to find the ship rolling and pitching. It

continued throughout the day, and made us both feel sick during the morning, but we recovered by coffee time. My breakfast soon went overboard. Lester missed lunch, I managed to struggle through the meat course. We made up for it by good meals at coffee and supper.

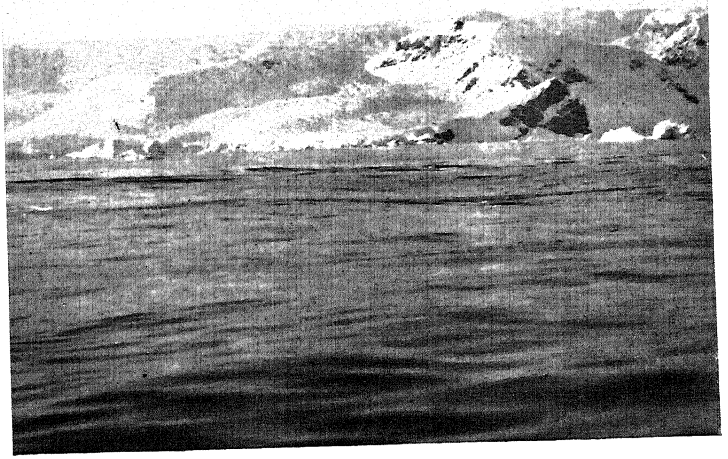
We saw quite a lot of places that day. To begin with, we made for the entrance to Sandefjord Inlet and had a look at the rocks off Trinity Island where the *Minerva* was recently wrecked, but there was no sign of the catcher. Evidently the heavy seas had finished her off, and had perhaps sunk her in the deeper water. We then steamed close to Small Island and the Christiania Islands,[1] and caught sight of Hoseason Island in the distance. We were chasing a whale near that part, but another whaler intervened so we abandoned the chase and left it to the other. He had to give it up eventually, much to our captain's delight.

We then proceeded south-east, passing along Brialmont Bay. The coast round this bay has numerous valley glaciers running inland and, as at Andvord Bay and Wilhelmina Bay, there seem to be indications of an inland plateau. Next, we returned to the vicinity of Small Island, Christiania Islands, and Two Hummocks Island, catching sight, after lunch, of three Blue Whales which we followed for a long time. Whenever we were near to the little school, they had just finished their series of short blows and disappeared for about six minutes on end. Every time this happened the ship would be put

[1] There are three islands forming this group shown on the Admiralty Chart. The whalers usually referred to the large one only as Christiania Island, ignoring the two smaller ones. The largest is also called Intercurrence Island.



26. *Cape Kaiser*



27. *Plateau in Brialmont Bay*

on the course they were making or else we steamed round in a circle until they reappeared, as likely as not making off at a tangent. It took over two hours to get in the first shot, but at last the ship was manœuvred so that the whales came up to blow just across the bow. The largest, a male about 65 to 70 feet long, was selected, and then off went the gun. The harpoon entered the animal but failed to kill him, and for a time, until the gun was re-loaded with a second harpoon, we were towed along by the whale at the end of a fairly short length of rope. When the second harpoon was ready, the ship was hauled in close to the whale so that he lay off the bow, and the harpoon was discharged with success. After the usual operations of inflating, tying alongside, cutting off the tips of the tail, and making two notches in the tail with a flensing knife to indicate that there were two harpoons in the body, we steamed off for Nansen Island.

In the afternoon we saw an Elephant Seal resting with its head sticking out of water. A whaling superstition is that an Elephant Seal on the starboard side is an omen of ill-fortune, but it is lucky to see one on the port side.

At about 10 p.m. snow started to fall and continued throughout the night. The following morning was foggy and all day visibility was poor.

By breakfast-time we were to the east of Two Hummocks Island where we chased a Fin Whale, a male about 50 feet long, which was shot after half-an-hour's hunting. Two harpoons were required to finish him off, and as the inside was badly damaged we towed him into Cape Murray Harbour, where, after marking him with

a flag, he was anchored. Owing to the entrails coming out of a hole in the side we were unable to keep him afloat for any length of time and had to inflate him twice. But we knew if he did sink, in about three days the gases produced by decomposition would be sufficient to refloat the body, and he could then be towed home.

Cape Murray is in reality an island, although the charts we were using showed it as part of the mainland. Separating it from the mainland is a narrow channel, reckoned by Captain Skidsmo to be about half a mile wide by about five miles long; it is called Graham's Passage, after his ship which was the first to pass through it. In it the Harbour is situated. Cape Murray Bay is a very small bay formed by Cape Murray and a small island off the north coast of the cape. Soundings were made in two places, but the bottom was not reached at 25 fathoms; not far off, however, the bottom was found at 20 fathoms and there the whale was anchored.

On Cape Murray there is an extensive exposure of rock which reaches down to the shore. The jointing is nearly vertical and very conspicuous. We could see no penguin rookeries, although on a rock near by we saw about twenty Ringed Penguins and half-a-dozen shags.

About midday, while we were still off Cape Murray, we came upon a school of eight Fin Whales swimming in two parties, other whales being visible in the distance. By 2 o'clock we had secured from among them a male about 60 feet long. We flagged him and went in search of another. An hour later we met three more to the north-west of Cape Reclus. They all came up to blow at the same moment and as soon as a shot was fired

disappeared like lightning, 'running away like hell', as the captain described it. We secured our whale, a male, but as the shot went high and pierced the body near the top of the back, a second was necessary.

After making him fast alongside we collected the one we had killed earlier and made for home. We reached the factory at 8 p.m. and spent the night in our own bunks. Captain Skidsmo was certain that we had brought good luck to the *Graham* and insisted upon our staying on board to keep the fates favourable.

We were back on board the *Graham* during the early hours of 7 March. I had discovered that the settee in the mate's cabin was the pick of the available sleeping accommodation and there I hoped to spend the night, as it was my turn to sleep aft.

When we got up we found that we were steering to the east of Two Hummocks Island and south-east by south of Christiania Islands. At a quarter past eight we were on the tracks of four Fin Whales and after a chase of an hour and a half the gun was fired, but the harpoon ricochetted off the whale. As quickly as possible we followed them again, the harpoon being hauled on deck and the gun reloaded. We were then to the east of Liège Island. At 11 o'clock we were just off Moureaux Point, which is the north point of Liège Island. There a Fin Whale was killed and flagged.

By midday we were following four or five Fin Whales between Liège Island and Christiania Islands and in the distance we could see three other whalers also on the track of whales. The place was a whalers' paradise for the time being.

At 1 p.m. we were following a school of about eight Finbacks when a Humpback suddenly rose out of the water on the port side of the bow. As soon as it realized its danger, it dived quickly under the bow and made off to join two others a little way away. After chasing one of the Finbacks for half-an-hour the gun went off and this time, too, the harpoon ricochetted, not off the whale, but off the water. In ten minutes the gun had been reloaded, the chase resumed, and another whale had lost its life.

I measured with a tape one of the Fin Whales caught that day and found that the length was 66½ feet. Both of those caught were males and both were about the same size.

On the way back to Cape Murray Harbour we came upon a school of eight Fin Whales. The two whales which we were towing hindered our progress, so they were hurriedly flagged and left behind, leaving us free to follow the new school at full speed. One harpoon was fired without success, rebounding off the animal's back into the air. We kept up the chase for an hour and a half and only gave it up when the weather became too thick and the whales started 'running' out to the open sea.

We collected the two 'flagged' whales and made for Cape Murray Harbour to pick up the one we had left there the day before, and afterwards headed for Nansen Island. Because of the strong wind, there was a fairly heavy sea. We remained outside Nansen Island during the night and delivered the catch at 5 a.m. on the 8th.

At 8 o'clock, while off Cape Kaiser, we saw several Bottlenosed Whales (*Hyperoödon rostratus*). The whalers

told us that a whale of this kind yields only about seven barrels of oil.

At noon, after two unsuccessful pursuits, we were chasing two Fin Whales between Christiania Islands and Two Hummocks Island. Half-an-hour later one was killed, almost instantaneously, and turned over on its back immediately afterwards. As the sea was rough and the wind bad, the captain decided to return to Nansen Island. Near Cape Murray we saw a beautiful iceberg resembling a church with a fine spire.

We learnt a good deal from the captain, who was a pleasant companion on a catcher and popular with his crew. He told us that between November and Christmas they expected practically only Blue Whales. During that period the *Graham* caught forty Blue Whales to one Fin. From Christmas, Fin Whales take the place of Blue. After 25 January they ceased whaling at night. Captain Skidsmo also gave us a useful description of the difference between the whales when swimming:

Blue Whale. Blue on back. Fin smaller than the Fin Whale.

Fin Whale. Dark grey or nearly black on back, white under belly.

Humpback Whale. Black on back. Shorter than either Blue or Fin Whales.

We spent the night on the *Svend Foyn I* once more and felt more rested. We were all right on the catcher in rough weather so long as we were on deck, but as soon as we went below for a meal or a rest, the heat, combined with the rolling, pitching and tossing, had a devastating effect on our interiors.

Another Fin Whale was secured at breakfast-time on the 9th between Two Hummocks Island and Liège Island—a male, which I measured and found was 75 feet long. On our way to deposit the whale at Cape Murray Harbour we passed close to the south-west shore of Two Hummocks Island where there was a large rookery of Ringed Penguins. We were so close to two Humpback Whales that we could see numerous barnacles on the tail of one of them as it lifted it out of water. A whale lifts its tail out of water when it is about to take a long dive.

We were out again by eleven o'clock, and as all the catchers which formed the whaling fleet operating from Nansen Island were near our position of the morning, the captain wisely made for a different ground, steering towards the east of Two Hummocks Island.

At 2 p.m., after following six Fin Whales for half-an-hour or so, the captain fired a shot, but unfortunately the line broke near the harpoon. It was wretched luck, for the whale was a large one and the shot perfect. The whale did not touch bottom even with 360 fathoms of line out. Three hours later we were between Cape Murray and Kaiser Island (or Cape Kaiser as it is described on the chart) pursuing another lot of Fin Whales, with five other catchers around us. After an hour's chase, the gun was fired. The harpoon glanced off the animal's back and the fore-line, caught by the propellor, was cut in two. The whale itself also hit up against the propellor with a thud. With a blow on the back from a harpoon and another from the propellor, the unfortunate creature must have felt extremely ill-used.

Off Cape Kaiser are two small islands which appear to

28. *Lester photographing from the rigging of the* 'Graham'

be nearer the south point of the island than indicated on the chart. On the south, or larger, was a rookery of moderate size, probably of Ringed Penguins, since we saw two large batches on icebergs close by, as well as several single birds on pieces of ice in Buls Bay. In and around Buls Bay we saw about a dozen Humpback Whales swimming in pairs.

At this time we were following three or four Finbacks and at 9 p.m. were still hunting them although darkness was almost upon us. Off Buls Bay the captain sent the harpoon into one of them without killing it and a second harpoon had to be used. As we secured the whale we heard the noise of two harpoon guns from other catchers a little way off.

In spite of foggy weather in the morning and afternoon the day had been quite pleasant and so calm that meals could be eaten in leisure.

We did not reach Cape Murray Harbour until about 5 o'clock on the morning of the 10th, owing to poor visibility; after picking up the whale we had left we proceeded to Nansen Island, and arrived at the *Svend Foyn I* about 8 o'clock, in falling snow and strong wind. We had some difficulty in tying up to the factory but after three or four attempts succeeded in doing so, and then started coaling.

Having had a week's whaling we packed up our traps and transferred our quarters, bidding *au revoir* to the crew of the *Graham* and presenting them with cigarettes and tobacco to recompense them for the extra work we had caused and the patience with which they had answered our multitudinous questions.

While we were with her, the *Graham* had caught eight Fin Whales and one Blue, so we could not complain of a bad week. She went out again at noon but returned in the evening, with the other two catchers, owing to bad weather, in fact all but one of the catchers belonging to the other factories came in harbour for the night.

Chapter XIV

THE END OF THE WHALING SEASON

The *Svend Foyn I* could carry about 25,000 barrels of oil as a cargo load, six barrels weighing one ton. They knew that at their rate of progress they would not have the cargo completed until about 11 April. They needed about 5000 barrels more and if they caught enough whales to have 'full cooks', when they could make 500 barrels of oil a day or 3000 per week, they would get away in a very short time.

Between 8 a.m. on the 10th and 8 a.m. on the 11th over 6 inches of snow fell. The 11th was the coldest day we had had at Nansen Island, the temperature being 24·0° F. at 8 p.m.

The *Graham* brought in two large Fin Whales during the evening. A heavy sea had coated her with frozen spray.

The completion of 20,000 barrels of oil on the 12th was celebrated by a lunch of roast pork and pudding, helped down with beer and Aquavit. Captains Vermeli and Björnaes Hansen were invited. Lester and I were both incapacitated after lunch and had to sleep it off. The weather was becoming decidedly colder and it was obvious that the best of the summer was over. All the three catchers came in that day with a whale apiece, and the *Graham* brought two more in the evening, and kept the factory busy.

Fin Whales became more abundant and on the night

of the 13th the *Graham* arrived with four. The fore-part and winches of the ship were again coated with frozen spray, giving her a very wintry appearance. The temperature was down to 20·1° F.

While rowing back in the pram from one of the small islands after erecting an observation-pole for survey purposes, I was followed by a Leopard Seal which kept coming up just off the stern to peep at me, evidently thinking that I might be edible. He dived once just under the boat, giving a good view of his lithe body as he passed beneath. I hoped, mostly for my own sake, that he would not bump against the bottom. Then he swam past close to the side of the pram. I forcibly demonstrated that his presence was undesirable but he ignored my hints until we were close to the ship's side.

The Fin Whales treated the whalers handsomely, for on 15 March they could be caught just outside the bay, so that only a short journey was necessary to bring them to the factory. This saved much fuel. The factory had a 'full cook' of blubber and meat in the fore and aft boilers. But bad weather which sprang up unfortunately had its effect in curtailing the catching.

On the 17th the *Ørn II* and *Falk* arrived with their catchers, the *Ørn II* with three, the *Falk* with four. The *Falk* moored alongside us, on the Pentland Firth side, while the *Ørn II* lay between the *Thor I* and the *Solstreif*. With the exception of the *Neko*, which was in the Schollaert Channel, and the *Ronald* at Deception Island, all the factories were at Nansen Island. This made a total of twenty-one catchers in De Gerlache Strait, of which eighteen were operating from Nansen Island.

Lester suffered a great disappointment. He had found a young Cape Pigeon evidently sick and had kept him in a box on the poop to try and pull him round. The bird would take pieces of blubber from Lester's hand, and the day after was quite perky but resented inspection. We christened him (or her) 'John Henry'. But the following morning after Lester had carefully fixed up a cage for his occupation he was found lying on his back in a very dignified position, dead.

While we were out in the pram on the 18th, we met Captain Johanssen of the *Ørn II* who delivered us a letter and parcel from Mr Bennett. In his letter, Mr Bennett mentioned that he had included among some specimens and sweets two small black penguins with long necks and small heads, which completely puzzled us until we opened the parcel and found two bottles of beer! We had not often seen beer in the Antarctic, and when it did appear it was drunk with as much reverence as expensive champagne.

From his description of the weather at Deception Island—incessant gales, snow and fog—it seemed as though they had been having a worse time than we had, in fact they had not had a fine day since he left Nansen Island on 11 February. As things were it was unlikely that the *Ronald* would leave until mid-April.

The 19th and 20th were shocking days, with continuous snow. A breeze from the north-east was blowing in the harbour; outside in the Strait it reached gale force. A good deal of ice had collected in the bay, and was being crushed against the shore. The rolling of the ship was almost enough to make us seasick. The *Pythia* in

Gouvernoren Harbour was having an uncomfortable time with ice and her catchers had had to tow some of it away. Our own ship was unable to get water, as ice blocked up the watering-place. Of our catchers, only the *Selvik* had brought in a whale, and this was caught in Wilhelmina Bay. The others had chased whales but with no success.

Captain Skidsmo told us that he went through Graham's Passage twice on the 20th and on one occasion saw between one and two hundred seals swimming in a herd like a band of penguins and jumping about in and out of the water. At first he mistook them for penguins because of their small size, until he saw their noses. The captain said that they were of a grey colour, but the chief engineer maintained that they were black. The captain had never seen seals swimming in herds in these parts before. They may possibly have been Fur Seals which have a habit of swimming together in herds.

Most of the whales they were catching at this period were found fairly close to Nansen Island—round Cape Murray and Cape Kaiser. Two ships actually found whales in Wilhelmina Bay.

As a result of a strong, sudden wind on the 22nd, the *Svend Foyn I* and *Falk* had to employ two catchers each to keep their bows up to the wind. The *Solstreif* was unlucky and lost a new anchor and 15 fathoms of chain. The anchor had caught tightly in a rock and the chain broke when they tried to raise it, but luckily no other damage was done. We had not been able to get ashore for two days; the ice prevented us one day and the following day the wind was too strong.

In the evening, when the wind had dropped, we rowed over to the *Falk* to pay Captain Larsen a visit and met at the same time the captains of two of his catchers. They told us that about five weeks before one of their catchers had gone as far afield as Antarctic Sound until they were within sight of Hope Bay, but could not approach closer owing to ice.

At about midnight, as we returned to our own boat, we noticed evident phosphorescence in the water as we plied the oars. It was also visible when an extensive glacier fall took place nearby and caused a disturbance to the surface of the water.

As her anchorage at Nansen Island was of little use, the *Solstreif* left for a harbour a little to the south of Cape Anna, which is a very good one for protection from wind and swell, but is no safeguard from icebergs. We went on board the *Solstreif* while Captain Andersen piloted the ship into safe water, and met the doctor of the *Neko*, who had come up from the Schollaert Channel the day before to attend to a sick man. He was a Scot and we had a brief but pleasant chat with him.

During the evening of the 23rd the *Graham* brought in a Blue Whale and as there was every promise of a fine day to follow we arranged for the night-watchman to call us at 4 a.m., so that we could go out with her once more. We awoke, after a second sleep, to find that we were just coming out of Graham's Passage—a disappointment, for we should have liked to have seen it properly. At 7 o'clock we were in Brialmont Bay. In the Strait, as in Brialmont Bay, there were numerous small bergs and a little scattered brash-ice.

Later in the morning we were on the tracks of some Fin Whales and by 11 o'clock had killed one near Cape Kaiser. The harpoon entered the whale near the dorsal fin, necessitating the despatch of a second which hit it on the opposite side of the same fin. As the beast was still alive, we had to haul close in to him and employ the hand-lance to finish him off. He lashed about with his powerful tail while he lay close under the bow, hitting the ship's side with mighty thuds. He measured 60 feet.

While we were hunting for whales the *Selvik* passed us, much to our chief engineer's disgust and astonishment, for in normal circumstances his own boat was much faster. An examination of the propellor showed that it had been obstructed by a whale's tongue which it had picked up when the catcher was lying alongside the factory. Once this was cleared, speed increased appreciably.

At half-past three in the afternoon we were after three Fin Whales between Wilhelmina Bay and Brabant Island. Within three-quarters of an hour the harpoon was lanced, but it was a long shot and missed the mark. The gun was re-loaded and we resumed the chase. At 5 o'clock, off Brabant Island, a little to the east of Mt Parry, we caught up with two Fin Whales, one of which, a male about 65 feet long, was soon the victim of a successful shot.

The visibility was good and from one position off Brabant Island, not far from Cape Kaiser, we were able to see Brabant Island, Liège Island, Anvers Island, Mt Parry, Mt Bulcke and Mt Français, as well as Christiania

and Small Islands, Two Hummocks Island, Nansen Island and the coast of the mainland from beyond Cape Charles (near Brialmont Bay) to Cape Anna.

We picked up the whale killed and flagged earlier in the day and proceeded home to Nansen Island which we reached about 9 o'clock. When we entered the harbour we found that new ice had formed over some of the still water. The bad summer may have accounted for the very much severer conditions than those we had experienced at Water-Boat Point the previous year.

Bird life was not very abundant, except for Wilson's Petrels and a fair number of Antarctic Terns. We saw two or three Snow Petrels (*Pagodroma nivea*) and a few Giant Petrels (*Macronectes giganteus*).

By this time the *Graham* led the field among the catchers at Nansen Island, with a total bag of 154 whales, 85 Blue and 69 Fin. The *Scott* followed with two less, then the *Grib*, belonging to one of the other factories, with ten less. Captain Andersen was very pleased, for the first two were under his command.

Whaling is not such a safe occupation as might be supposed from the descriptions in my diary. One is warned to keep well out of the way whenever the hauling in of a whale produces great tension on the rope. Captain Skidsmo had a narrow escape from death whaling off South Georgia when his whale line broke. Fortunately it hit him on the side of his body and not on his head, but it laid him up for three months. Two gunners he knew at South Georgia lost their lives, one because the screw in the breech of the gun was a little too small and back-

fired into his chest, the other because the gun came off its stand when he fired it.

Apparently the whales were moving southwards at this time, for they were being caught in the Strait outside Wilhelmina Bay and to the south. As the ice conditions in the harbour showed no signs of improvement, we boarded the *Graham* again on the 24th.

When we got up next morning we were off Cape Kaiser. The day was fine and sunny, but cold. A small Fin Whale had been killed a few minutes before we arose. We towed him back to Nansen Island. Two hours later we were off Brabant Island chasing Fin Whales. At 11 o'clock one of a school of three was harpooned. He floated on the surface and was soon brought alongside. As he was not quite dead, the hand-lance was used. The victim was a large male about 70 feet long.

At 3 p.m. after a chase lasting since lunch-time, we secured a female Fin Whale about the same size as the male and, like that, captured off Cape Kaiser. As we made for Nansen Island after picking up the second whale, a strong southerly breeze blew and the temperature of 23·0° F. soon drove us from the bridge to the warm cabin.

We were quite satisfied with the trip, for we had secured about a hundred more photographs. At one time, while near Brabant Island, we could see a high mountain far off, which might possibly have been Mt Bransfield. At the same time we could see Mts Parry, Bulcke, Français (9413 feet), and William (5046 feet). On another occasion we were not far off the Schollaert Channel and could see Cuverville or De Rongé Island in the distance.

As on the previous day, we saw many Medusæ (jelly-fish) in the water when we stopped to tie up whales alongside. Sometimes they were solitary, at other times they were in clusters of up to a dozen.

All over the harbour and Wilhelmina Bay the new ice had broken up into sheets and 'pancakes'. We saw practically no ice in the Strait and only a few icebergs. Brash-ice around the factory prevented us from getting ashore, so we spent two uninteresting days, mainly engaged in packing and transferring cases from the large cabin amidships, which would soon be required by the captains of the catchers, to the hold.

Dodger, one of the dogs, had a narrow escape from drowning. After supper I went to see if the pram was alongside, and heard faint howls from the water. Dodger had once again fallen overboard. He had done so many times before, but seemed incapable of learning a lesson. This time he was being crushed between the water-boat and the ship's side. He looked exhausted as we got him out. The chief officer gave a hand and we hauled him on deck, but he was none the worse for his adventure. We hoped that this time it would make him more careful.

On the 28th we managed, in spite of the ice, to push through with the pram to North Thor Island, the motor boat giving us a little assistance. We were particularly anxious to complete that part of the map of the harbour.

While rowing back we had another adventure with a Leopard Seal. We first saw it when it was lying on a large piece of ice near the *Thor I.* As we returned home, it suddenly appeared close to the pram, and for a little

time kept poking its head out of the water round the boat. While I rowed, Lester took the spare oar and waited for our unwelcome follower. When it came close enough he succeeded in hitting it on the neck and gave it a surprise, making it dive as quickly as possible, splashing water all over the boat and the plane-table. It must have thought, if it had mistaken us for penguins, that we had unusually powerful flippers. We saw it again later on, but this time it kept at a respectful distance.

After coffee, the ice having floated out of the harbour with the current, we paid a visit to the *Ørn II* and spent an evening examining Captain Johanssen's chart of this part of the Antarctic.

As our catchers had brought in enough whales to complete the cargo, whaling finished as far as we were concerned and we were due to leave very soon. Of our catchers, the *Graham* headed the list for the season with 161 whales, the *Scott* followed with 160, and the *Selvik* was lowest with 140.

The *Ørn II* expected to cease whaling about eight or nine days after us; the *Solstreif* was due to leave in a short time; the *Thor I* hoped to get away about 9 April. It seemed probable that the *Falk* would be the last to finish.

Flensing and meat cutting finished at coffee-time on the 29th, the factory completing her cargo of between 25,000 and 26,000 barrels of oil. For the rest of the day the ship's company prepared the ship for departure, hauling in a few of the mooring ropes and wires, cleaning gear, hoisting the motor boats and water-boat on deck, and doing a multitude of other jobs. Each catcher carried about 480 fathoms of rope on each side

which, with the fore-lines, made a length of about 1000 fathoms, 3000 among the three catchers. All this was hauled on board the factory, by hand, before supper.

At night there was a general air of haste and unrest. Visits were paid to other ships, and whisky was consumed with much talking. Captains Larsen and Johanssen came on board after supper to bid us good-bye.

During the night there was a slight fall of snow which carpeted the decks, and then came the memorable day of Thursday, 30 March 1922. From daylight onwards there was a good deal of noise on board, especially on the poop, under which we were trying to sleep. We gave up all hope of doing so at 6 o'clock and got up. A quarter of an hour later the anchors were heaved in. We were soon under way and left the harbour to the accompaniment of the sirens of the other ships.

At half-past eight we were in the centre of De Gerlache Strait between Cape Reclus and Cape Murray. There we saw a good many Ringed Penguins swimming around in small bands. On pieces of ice were a few Weddell Seals, two Crabeater Seals, and a Leopard Seal. We passed Cape Kaiser and Harry Island and caught a glimpse of the shore of Bouquet de la Grye Bay. We kept midway between Two Hummocks Island and Liège Island. When off the north point of Liège Island before lunch we saw a Fin Whale. The gunners itched for one last shot, and the poor beast must have felt strangely happy at his unaccustomed safety. Near there, too, we saw a large tabular berg divided by a gap in the middle.

Our course lay between Cape Neyt and Christiania Islands, rather nearer the former. After lunch we were

nearly abreast of the north-west point of Hoseason Island and passed by it on the west side. At about half-past four we were level with Low Island which we passed on the east side. From there we could see Smith Island in the distance. Before supper we were heading north midway between Smith Island and Snow Island. The latter is well named, for it looks merely like a rounded island of snow.

At 7 p.m. we had our last view of Antarctica, when we could just see the last of Smith and Snow Islands. At 8 o'clock there was nothing more to be seen.

I paced the deck in the evening with most conflicting emotions—impatience at the thought that it would be at least two months before I should see my people at home; kaleidoscopic recollections of adventures, humorous and dangerous, at Water-Boat Point and while hunting whales; affection for the kind and comradely help of the whalers; and that queer and almost unaccountable reluctance at leaving the Antarctic to which, ever since I was a small boy, I had been attracted and which still exercised its strange influence over me.

RETROSPECT

Before I left England I was told by an explorer friend that when once I had been to the Antarctic, I should, in spite of the discomforts, dangers and difficulties, fall under the spell of its fascination and all my life wish to return. Many times since I have realized that he was right.

Appendix A

METEOROLOGICAL OBSERVATIONS

NOTES ON SOME METEOROLOGICAL OBSERVATIONS

MADE AT

WATER-BOAT POINT, DANCO LAND

BETWEEN

17 January 1921 and 31 December 1921

*

Station. WATER-BOAT POINT, Danco Land.
Latitude. 64°48′ S.
Longitude. 62°43′ W.
For description of surroundings see pp. 35–37.

Variation. 18° E.

List of Instruments Used.

The meteorological screen was erected on 17 January 1921, on a hillock about 50 yards to the north of the hut. It was 18½ ft. above sea level. The screen itself was made with louvre-boards on three sides and a boarded back, by the ship's carpenter. The doors opened on the north side. It was fixed to a base constructed from pemmican cases and the whole apparatus was held rigid by guy wires. To the top was fixed a wind vane which I made on board ship, and a fitment for holding the portable anemometer (Short and Mason Tycos anemometer).

Inside the screen a pair of maximum and minimum thermometers were suspended from brass nails. In addition there were dry bulb and wet bulb thermometers. The swing thermometer was also hung in the screen.

All the instruments were supplied by Messrs Cooke, Troughton and Simms Ltd.

At night-time the reading of the instruments was carried out by the light of a hurricane lamp or an electric torch, though at certain times of the year it was possible to read the instruments throughout the night without artificial aid.

Times of Observation.

All observations are recorded in zone time four hours slow of Greenwich. Zero hour is at midnight, zone time.

Hours of Observation.

JANUARY. Observations were taken every four hours during night and day from 17 January onwards.

FEBRUARY. MARCH. Observations were taken every four hours during night and day.

APRIL. Observations were taken every four hours during night and day from 1st to 8th and every four hours during the day-time only (0800–2000) from 9th to 30th.

MAY. Observations were taken every four hours during the day-time (0800–2000).

JUNE. Observations were taken every four hours during the day-time (0800–2000) from 1st to 20th, and every two hours during the day-time from 21st to 30th.

JULY to OCTOBER. Observations were taken every two hours during the day-time (0800–2000).

SUMMARY OF METEOROLOGICAL OBSERVATIONS MADE AT WATER-BOAT POINT, DANCO LAND. JANUARY TO DECEMBER, 1921

	January	February	March	April	May	June	July	August	September	October	November	December	Annual Summary
Number of observations	86	148	166	134	123	150	217	202	206	219	309	192	2152
No. of days on which observations were taken	15	28	31	30	31	30	31	31	30	31	30	16	334
Average temperature. Degrees Fahrenheit	36·0	35·1	31·4	30·1	21·2	26·3	14·9	7·6	21·1	28·3	27·5	34·4	26·1
Highest temperature in month	49·8	49·0	41·5	47·0	38·5	37·5	33·0	38·8	35·0	36·0	41·5	47·5	49·8
Lowest temperature in month	27·3	25·0	19·5	19·5	4·0	13·5	−12·5	−16·0	1·5	13·9	13·0	27·2	−16·0
Wind direction, percentage of monthly totals:													
N.	4	9	10	7	7	9	5	3	14	27	10	16	11
N.E.	7	14	16	28	20	19	14	3	6	15	7	15	13
E.	1	8	7	8	10	9	6	6	4	2	4	10	6
S.E.	6	13	13	7	27	27	13	27	12	4	12	4	13
S.	39	17	13	11	27	19	32	46	46	19	26	21	27
S.W.	30	23	26	27	6	8	20	11	13	27	35	21	21
W.	0	1	3	0	1	1	2	1	1	1	1	3	1
N.W.	4	7	7	9	1	7	4	1	1	2	1	3	4
Variables	1	2	1	1	0	1	0	0	1	2	1	1	1
Calms	8	6	4	2	1	0	4	2	2	1	3	6	3
Wind force:													
Highest Beaufort Scale	5	8	8	9	8	10	10	8	11	10	8	7	11
Above 5 (Beaufort Scale), percentage of monthly totals	0	9	13	40	20	30	7	7	5	16	9	3	12
Number of days with gale	0	1	4	12	6	11	5	3	4	3	3	0	52
Cloudiness, percentage of monthly totals:													
Completely overcast (100 %)	46	66	68	75	45	55	56	42	43	57	53	40	53
Cloudy (50–99 %)	36	18	13	15	29	26	24	33	40	37	42	52	32
Fair (1–49 %)	9	13	17	7	23	19	18	22	17	6	5	8	13
Cloudless (0)	9	3	2	3	3	0	2	3	0	0	0	0	2
Falling snow, percentage of monthly totals:	7	6	19	23	23	19	31	13	25	40	47	13	25
Rain, sleet and hail, percentage of monthly totals:	5	5	8	20	3	4	1	0	0	1	0	3	3

NOVEMBER. During the time tidal observations were being made observations were taken every two hours during night and day (1–6 and 16–30 November), but during the time the tide-pole was out of action (7–15th) observations were taken every two hours during the day-time only (0800–2000).

DECEMBER. Observations were taken every two hours during night and day up to 16 December, the last date included in the summary. Afterwards, until the end of the month, observations were taken every two hours during the day only.

Notes on the Summary.

In examining the summary, the following facts should be borne in mind.

Observations of wind directions were taken with 'true' directions.

All temperatures are given in degrees Fahrenheit.

BEAUFORT'S SCALE OF WIND FORCE

Beaufort No.	General description of wind	Limits of velocity in miles per hour
0	Calm	Less than 1
1	Light air	1–3
2	Slight breeze ..	4–7
3	Gentle breeze ..	8–12
4	Moderate breeze ..	13–18
5	Fresh breeze ..	19–24
6	Strong breeze ..	25–31
7	High wind ..	32–38
8	Gale	39–46
9	Strong gale ..	47–54
10	Whole gale ..	55–63
11	Storm	64–75
12	Hurricane	Above 75

Wind force is indicated according to Beaufort's Scale. During the earlier part of our observations we were able to gain experience in judging wind velocities by the help of portable anemometers, but the strong winds eventually wrecked these and for the remainder of the time we were obliged to rely on our personal estimates. Lester's nautical training had given him additional experience, and when there was any doubt in our minds we averaged our individual opinions.

General Remarks.

We spent a year and a day at our base, Water-Boat Point, and therefore experienced a complete cycle of the weather conditions. This is best described in my companion's words:[1]

We found that the weather experienced during 1908–10 by Charcot was almost identical with ours in practically the same locality and after a lapse of ten years. Taking a retrospective view of the weather we experienced, my impression, generally speaking, is very bad. At no time during the year could the conditions be called very severe, but they were trying in the extreme. The very great and rapid fluctuations in temperature, with the consequent freezing up and thawing out of everything, the almost incessant winds and overcast sky accompanied by heavy precipitation and thick weather, were detrimental to our work and would prove trying to the most philosophical of minds. The continual changes in the temperatures gave us little opportunity of becoming acclimatized. For instance, in July and during an interval of only twenty-four hours, a change of wind from the north-east to the south-west quarter brought a temperature of +29° F. down to −11·5° F. in the course of a single day. Degrees, however, represented little in the matter of personal sensations, and a high temperature of from 25 to 35° F. accompanied by a wind and a saturated atmosphere was infinitely more trying than a calm or

[1] Lester, M. C. 'An Expedition to Graham Land, 1920–22.' *The Geographical Journal*, Vol. LXII, pp. 183, 184.

even a moderately windy day, but with a perfectly dry atmosphere and with a temperature ranging between say +10° F. to several degrees below zero; in fact, under the latter conditions existence became cheerful.

The following notes will give a general impression of the weather experienced at our base:

January was a month with light to moderate winds, mostly from the south and south-west, though changing occasionally to the north and north-east quarters. The prevalent winds in February were from the south and south-west with stronger and a higher percentage of winds from the north and north-east. The first gale was encountered in the early hours of 6 February. These two months with December gave us the highest percentage of calm weather, smallest snow-fall and highest temperatures. The high temperatures caused many glacier falls in the vicinity. There were fairly heavy falls of rain on 28 January and 23 and 24 February. The highest temperature for January, 49·8°, was recorded on the 20th, and the lowest, 27·3°, on the 18th and 21st. In February the highest was 49·0° (13th) and lowest 25·0° (12th).

The wind became stronger in March, blowing mostly from the south-east, south and south-west quarters, but with a slightly increased tendency towards the north and north-east. March was rather duller than the first two months and its commencement was also the beginning of considerable snow-fall. The snow, however, did not lie about very long and was alternated with rain, sleet, and hail. The end of the month marked the beginning of a permanent coating of snow on the islands. The second gale was encountered on the 24th. It blew first from the north-east, then from the south-west and finally veered back again to the north-east. Gales were also recorded on the 27th, 30th and 31st. On the 13th rain, sleet and snow fell most of the day and towards noon large flakes of snow up to 2 inches across fell for half

an hour, followed by sleet. The temperature during this particular day was between 33·7 and 32·0°. During the first half of the month much ice fell from the nearby glacier faces owing to fairly high temperatures. The maximum temperature for the month was 41·5° (20th and 21st) and the minimum 19·5° (28th).

In April strong winds were more frequent, in fact June and April were the windiest months, and the prevalent quarters from which it came were again south, south-west and north-east. Actually the highest percentage came from the last quarter. Wind from this quarter brought much snow which from April onwards gradually increased in thickness on the islands. It was the month with the highest percentage of completely overcast sky and the highest percentage of rain, sleet, and hail. The highest temperature (47·0°) was recorded on the 2nd and the lowest (19·5°) on the 7th. Between the 1st and 22nd, the latter of which was the last day on which it was recorded, rain fell on eight days. On the four days, 18–21 April, it fell almost incessantly. The north-east wind was mainly responsible, though on two days it rained with wind from the south-west and south-east. With the increased wind and gales the permanent coating of snow naturally began to drift (first recorded on the 16th). Typical examples of the weather experienced during April are contained in the following groups of entries:

Group I.

13. 4. 21.. Wind commenced blowing lightly from the N. and N.E., then changed to strong gusts from the S.W. Snow fell during the early part of the day and in the early afternoon, followed by sleet. Temperature just below freezing.

14. 4. 21. Improvement. Sunshine during day. S.W. wind began by blowing in strong gusts until about 1200. During afternoon velocity decreased and at 1800 almost calm. Temperature between 32·0 and 28·0°.

15. 4. 21. Snow, sleet, and hail most of day with wind from N.E. and N.W., finally blowing hard in evening from S.W. Temperature round about freezing.

16. 4. 21. In morning strong W.S.W. wind with snow-drifting. From 1400 to 1700 spell calm weather with wind shifting to E.N.E. Later changed to W.S.W.

Group II.

26. 4. 21. Dull and overcast all day. Wind from N.E. Temperature about 30·0°.

27. 4. 21. Calm, dull, ominous morning. Gradually wind came first from N.E., then great gusts over 40 m.p.h. from E. and S.E. accompanied by snow and blinding snow-drift. At 2000 temperature was 26·0°.

28. 4. 21. Strong gusts of wind blowing during night. A fine, dull day. Wind began from N.E., then blew moderately hard from N.W., changing afterwards to N.E. Temperature 29·0–28·0°.

29. 4. 21. Fine and sunny day but snowing hard at 2000.

30. 4. 21. Snow falling lightly, on and off, all day.

During May the prevalent winds were from the south, south-east, and north-east. There was a marked decrease in strong winds. The percentage of snow-fall kept fairly high but showed a very slight decrease on the previous month. The lower temperatures produced more agreeable weather. I noted in my diary for the 3rd that: 'This dry cold is much pleasanter than our former weather and we greatly appreciate the change from rain, sleet, and wind to calm, cold, dry days.' The southerly winds kept the temperatures down. Rather curiously, the lowest temperatures were recorded during the earlier parts of the month and the highest (maximum 38·5° on the 29th) during the last week. The minimum temperature (4·0°) was recorded on the 9th. There

was a cold spell from the 7th to 16th when the highest reading was 18·0°. Typical weather of the colder period is described in the following extracts from my diary:

6. 5. 21. Snowing hard during early part of morning and during the night 2–3 inches of snow were added to the permanent layer. Temperature highest at noon, =24·0°, and falling to 17·0° at 2000.

At about 1700 we witnessed a phenomenon we had not noticed before.[1] We were suddenly enveloped in a blinding snow-storm; it lasted only a few seconds and we must have been in the middle of a small localized pocket.

7. 5. 21. Fine, dull day, with a southerly wind. During the night the temperature fell to 8·8°. It rose to 13·9° at 1600 and fell to 12·1° at 2000.

8. 5. 21. Snowing most of the day. Wind from S.E., E. and W. in evening. Temperature between 15·5 and 12·5°.

9. 5. 21. Enormous gusts of wind reaching nearly 60 m.p.h. from the E., lessening in evening. Temperature between 10·0 and 4·0°.

10. 5. 21. Wind dropped during night. Fine, cold day. Little sunshine. Variable wind ending with stronger S.E. wind in evening. Temperature between 14·5 and 13·0°.

11. 5. 21. Fine, clear, sunny morning. Few flakes of snow in evening. Temperature between 15·5 and 11·5°.

12. 5. 21. Fine, cold day. Light wind. Temperature 18·0–17·0°.

13. 5. 21. Fine day with sun until about 1300 when it disappeared behind the mountains. S. wind of light velocity. Temperature 17·0–15·0°.

On 19 May there was a halo round the moon at night. The temperature during the day was between 21·0 and 18·0°.

[1] Nor did we witness it again.

As a contrast to the extracts given above, one or two entries at the end of the month show how varied the weather could be:

26. 5. 21. During the night the temperature rose from 22·0 to 32·5°. In the early hours of the morning the easterly and north-easterly 'steam-rollers' blew in great gusts and continued throughout the day.

27. 5. 21. Dull, windy day. Very strong wind from between E. and N. Lull about midday when a very small amount of snow fell. Temperature between 32·5 and 30·0°.

28. 5. 21. Dull, windy day. Hail fell most of the night and occasionally during the day and in the evening. Wind from N.E. at times very gusty. Temperature rose from 32·5° at 0900 to 37·0° at 1200, falling to 33·0° at 2000.

29. 5. 21. Dull, windy day. Wind from N.E. Sleet falling in morning. Temperature between 33·0 and 32·0°.

In June the prevalent wind directions were still south and south-east, with a decreased amount from the north-east. Next to April it was the windiest month. It was not quite so cold as May, but more overcast. There was less snow-fall and about the same amount of sleet and hail. The minimum temperature recorded (16th) was 13·5° during a spell of four days with lower temperatures. The highest, 37·5°, was recorded during a spell of rough weather from the north-east and south-east (23rd–25th). Heavy hail fell on the 23rd (the latest record), and on the next day granular snow fell most of the afternoon and evening (temperature between 34·5 and 31·0°). The following entries from my diary give an idea of the weather encountered during the month.

4. 6. 21. Fine day, but cloudy. A little southerly wind. Temperature between 25·5 and 23·0°.

5. 6. 21. Fine day with sun for about two hours. S. to S.E. light wind. Temperature between 19·0 and 15·0°.

6. 6. 21. Dull, warm day with fine snow most of the time. Wind from N.W. Temperature between 29·5 and 24·0°.

7. 6. 21. Dull with strong gusts from N.E., and much sleet and snow-drifting. Temperature between 33·0 and 31·0°.

8. 6. 21. Bad weather—sleet, snow and snow-drifting in morning and afternoon. Strong N.E. wind.

The weather around Midwinter was somewhat mixed:

16. 6. 21. Fine day. A little wind from E. quarters. Well defined halo round moon at 1800. Temperature between 20·0 and 13·5°.

17. 6. 21. Fine. Sunshine for a little while at midday. Light wind from southerly quarters. Temperature between 22·0 and 19·0°.

18. 6. 21. Fine early morning, though cloudy, until 1400 when snow began to fall lightly; it continued for the rest of the day.

19. 6. 21. Gradually working up from a dull morning with light breeze to a very gusty evening with wind up to 60 m.p.h. from N.E. and much drifting snow. Snow falling fairly hard at 2000. A series of lulls alternating with fearful sledge-hammer gusts from the N.E. Temperature rose from 23·0 to 28·0° during day.

20. 6. 21. Day began with light wind from E.S.E. Gradually wind worked up. Powerful gusts from N.E. at noon and in evening. Temperature 27·0–26·0°.

21. 6. 21. Midwinter. Slight improvement. Gusts less violent. Fresh breeze varying from N.E. to E. Dull all day and snow from 1200 onwards. Temperature rising from 27·0 to 31·0° during day.

22. 6. 21. Dull weather. Fine snow falling intermittently. Gusty wind N. to N.E. Temperature between 33·5 and 30·5°.

23. 6. 21. Finer weather with a short view of the sun. At 2000 wind suddenly changed round from a light S.W. to strong N.E. with heavy hail. Temperature between 37·0 and 31·0°.

In July, when the minus temperatures began, the wind came mostly from the south, south-east and south-west, with a decreasing amount from the north-east. It was light to moderate, but increased in force and became gusty in the second half of the month. July was one of the months with the greatest snow-fall, the others being October and November. Sleet fell only on 14 July. Snow, which fell on twelve days, came from both northerly and southerly quarters. The variety with a tabular structure fell on the 5th (temperature 25·5–22·5°). Frost-smoke was first recorded on the 24th, about the same period as 'ice flowers' appeared on the new ice (first record 21st). Rime was first seen on the 16th.

The maximum temperature of 33·0° was recorded on the 17th with rough weather from the south-west, and the next highest, 32·0°, on the 30th, with similar weather from the north-east. The first record of a minus temperature was on the 21st. The lowest reading was −12·5° on the 31st, with a breeze from the south-west. During this month we suffered from rapid changes in temperature, the most marked of which was between the 27th and 31st. My entries for these days read:

27. 7. 21. Fine snow falling nearly the whole time and temperature up to between 28·0 and 23·0°.

28. 7. 21. Temperature down to 4·5° in morning and then up to 18·0° at 1800. Wind from N.N.E. (changed from S.E. during night). Day began fine but from 1000 onwards snowed continuously and moderately hard.

29. 7. 21. Day began with very strong steady wind from N.E. with much drifting. Later changed to S.W. and turned out fine and calm at 1800. Temperature during N.E. wind was up to 29·0° but it fell with change to S.W. to 22·0° at 1800.

30. 7. 21. Another day of N.E. winds developing strongly in evening. Snow falling part of day. Temperature between 32·0 and 28·5°.

31. 7. 21. Temperature down to −5·0° at 0800. During night maximum reading was 29·0°, a change of 34·0°. Light winds from S. to S.W. At 1600 temperature fell to −10·4°. At 2000 a breeze from S.W. sent temperature down to −11·5°.

Gusty weather was experienced on five days only between 16 and 29 July. The wind came from north-east, south-east, and south-west. Three unpleasant days occurred in the middle of the month when we had a regular gale.

16. 7. 21. Began well but gradually got worse. Snowed heavily in evening. N.E. wind sprang up in evening. Temperature rose from 18·0 to 26·0°.

17. 7. 21. Whole gale from S.W. during night. A spade standing outside the door was blown 10 ft. and an empty kerosene tin lay about 150 ft. from its hook. A fine day. The sun could be seen for exactly two hours, before it disappeared behind the mountains. At night the temperature rose to 33·0° but fell to 6·0° during the day.

18. 7. 21. Strong S.W. wind blowing at 0800. Calmer as day passed, but in evening N.E. wind blew up. Temperature rose from 12·0 to 17·0°.

August continued cold, but it produced the best weather. There was little wind or snow, and the air was dry, cold, and clear. The greater part of our observations of frost-smoke, which occurred from the open water to the north and west, was made during this month. We had no more minus temperatures after August (last record on 26th). The prevalent winds were from the south and south-east, practically none from north or north-east, which accounted for the improved weather. As in July, only quite a small proportion of the wind was above Beaufort Scale 5. This month had the

second lowest percentage of completely overcast sky and also showed a small snow-fall. Our record low temperature of −16·0° was experienced on the 1st and continued the low readings of the end of July. As the first few days are interesting the diary entries are given below:

1. 8. 21. Minimum thermometer registered −16·0° for night and at 0800 temperature in screen registered −15·0°. During day, however, temperature rose a little to −10·0° at 1600 and 1800. Light winds and breezes from the S.S.W. all day changing to a stronger wind from S. in evening. Barometer rising.

2. 8. 21. Temperature rising all day from −4·0° at 0800 to 2·7° at 1800. A little wind from S.

3. 8. 21. Temperature has remained round 10·0° but barometer is falling and the wind, after blowing from various quarters, has turned to N.E., which is usually fatal to fine conditions.

4. 8. 21. Dull morning, changing to a gusty afternoon, with much drifting snow. Wind from S.E. and E. Temperature above 20·0°.

Low temperatures held until the 31st when there was a complete change as the following two entries will show:

30. 8. 21. Another fine, sunny day and, as there was very little wind, delightfully warm. Clouds gradually appeared during the day. During the night temperature fell to −2·0°. At 1200 the temperature was 18·0° but it fell again in afternoon and evening.

31. 8. 21. Change in weather. Moderately gusty E.S.E. wind and temperature between 38·8° (the maximum reading for the month) and 31·0°. Snow becoming slushy.

Some of the remaining entries during this month are interesting:

12. 8. 21. Although the temperature has been between −6·0 and −7·0°, yesterday and today have been the first times we have felt the slightest warmth from the returning sun. We had sunshine from 0800 to 1230.

23. 8. 21. 2000. Rime $\frac{1}{4}$ in. long on guy wires of meteorological screen (temperature 10·0°).

24. 8. 21. 0800. Rime $\frac{1}{4}$–$\frac{1}{2}$ in. in length (temperature 8·5°).

26. 8. 21. At 0800 there were interesting phenomena to observe. To the N. and W. there was much frost-smoke rising from the open water which caused a low fog bank. To the S. and S.W. along the shores and over the ice lay low stratus clouds about 100 ft. thick, not quite obscuring the tops of the glacier faces in places. On everything was a deposit of rime; on the flagstaff it was 4 in. long. The temperature was −1·7° in the screen, but it rose during the day to 8·0°. At about 1100 a thick fog lay all around, especially to the N., and persisted all day.

27. 8. 21. A beautifully fine, cold, crisp day with sun shining all the time. At 0800 there was rime and frost-smoke. Later the rime began to fall and in the afternoon the frost-smoke decreased in quantity. Temperature varied between 9·0 and 0·5°, falling in the evening to 2·0° at 1800. High barometer.

28. 8. 21. Fine and sunny. Little by little we get more sunlight.

29. 8. 21. Another fine, sunny day. Almost cloudless but cold owing to south-westerly breeze. A little frost-smoke rose from open water up to 1400 and a few ice flowers were to be seen all day. Temperature between 8·2 and 2·5°.

September was also a fine month except after the 20th, when snow again began to fall and heavy drifting was experienced. Like the previous two months, winds were for the most part light, the prevalent direction being south. There was, it will be noticed, a pronounced increase in the proportion from the north. It was during September (24th) that we had our strongest wind, nearly 70 m.p.h., which came from the south-west. The low percentage of winds above Beaufort Scale 5 should be noticed. The percentage of completely overcast weather was low, though that of snow-fall showed

a marked increase over the preceding month. There was no rain, sleet or hail in either August or September. Temperatures gradually started to rise until the average was well above that for August. This rise caused the snow accumulation to begin to diminish. The maximum reading of 35·0° was recorded on the 20th, and the minimum of 1·5° on the 25th. Occasional entries during the month give interesting weather details and peculiarities:

8. 9. 21. Dull. Low stratus clouds all day obscuring the mountain tops. A little frost-smoke in morning. Temperature between 16·0 and 13·0°.

9. 9. 21. Fine, sunny day. Southerly breeze blowing steadily all day. Temperature between 16·0 and 11·0°. Have noticed during the last day or two, when the weather has been fine, visible refraction to the north which causes icebergs to look as though they are floating above the surface of the water.

11. 9. 21. A very little rime formed at 0800, but disappeared by 1200.

13. 9. 21. Dull, overcast day with a little granular snow now and then. After blowing from various directions wind changed to E.N.E. at 1800. Temperature rose from 18·0 to 27·0°.

The weather of the next five entries is interesting:

18. 9. 21. Heavy fall of large flakes of spicular snow.

23. 9. 21. Finer but cloudy. Cold wind from southerly quarters. A very little sunshine round 0800. Temperature fell during the day from 23·0 to 17·0°.

24. 9. 21. Bad weather. In the evening a gusty north-easter came, bringing high temperatures. Barometer falling. Temperature rose from 23·0 to 31·0° during day. Snow-drifts forming in evening.

Just before 2000 a powerful gale sprang up from the S.W. with velocity of about 60–70 m.p.h., gradually dying down to a strong breeze at 2200.

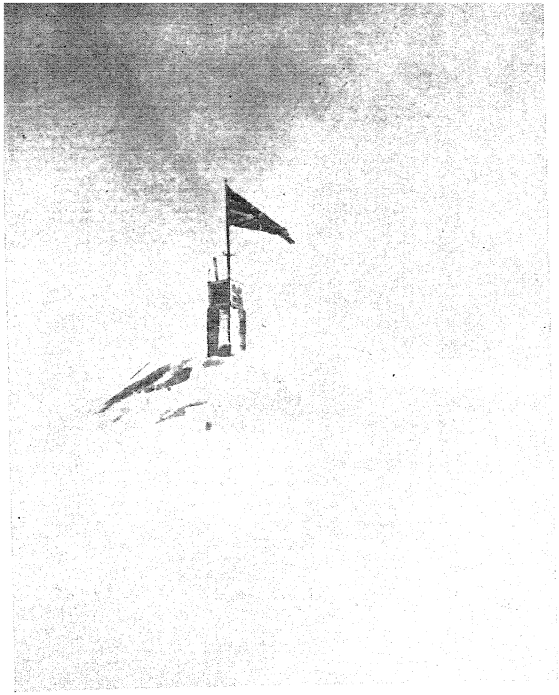
25. 9. 21. During night temperature down to 1·5°. Morning and early afternoon fine and sunny. In late afternoon clouds sprang up and wind changed to N. Barometer falling.

26. 9. 21. Snow falling all day. We noticed several crystals about $\frac{1}{16}$ in. long shaped like tiny dumb-bells. The ends were six sided and the crystals were joined together by a stem. We had never seen any before. The snow at the time consisted of a mixture of granular and spicular crystals. During morning and afternoon temperature above 30·0° with wind of varying force from the N.E. In late afternoon wind changed to S.S.E. and temperature fell to 18·0°.

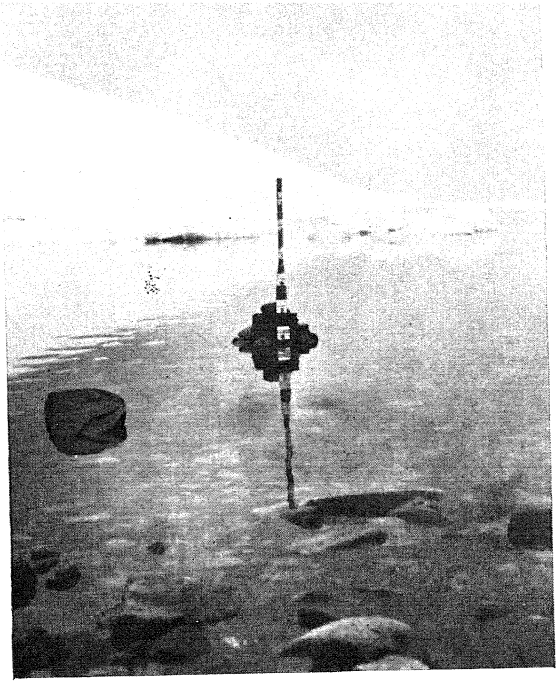
October was characterized by strong winds in the middle of the month and much snow. The prevalent wind directions were south-west and north. The percentage of winds above Beaufort Scale 5 showed a marked increase. Gusty weather from the south-west and north-east was experienced on the 1st, 10th, 13th, 17th and 18th. The 10th was a bad day with wind up to Beaufort Scale 10. On this day we also had the first hail of the season. I give the details below:

10. 10. 21. All morning and most of afternoon snow and hail have been falling. Minute or two sunshine about 1600. At 1400 a regular gale blew for about five minutes but settled down a little less strongly. Just after 1600 the wind changed to strong, gusty sou'wester with much snow. Up to 1200 barometer fell rapidly and then rose rapidly. Much drifting snow. Temperature up to 32·4° at 1200 and down to 27·2° at 1800.

On the 11th we had a few sudden gusts from the west, which was rather unusual, changing later to the south-west. With the exception of November we had the heaviest snowfall in October, with a correspondingly high percentage of completely overcast weather. It was cloudy and overcast practically the whole time and from the 6th to the 26th we had bad weather almost incessantly with snow on eighteen out of the twenty-one days.



29. *Solitude. The meteorological screen*



30. *The tide-pole*

Temperatures gradually became higher, the average being 7·2° higher than September. The highest reading was 36·0° on the 26th, and the lowest 13·9° on the 20th.

Unusual entries from my diary record:

2. 10. 21. Snowing all day. Large flakes of spicular snow. Temperature risen from 27·0 to 32·0°.

3. 10. 21. Fine, sunny day. Sun just began to disappear behind Lemaire Island at 1600. The day began almost cloudless but gradually cirro-stratus clouds half covered the sky and at 1400 we saw a faint halo round the sun. Visibility very good. Temperature fallen from 24·5 to 20·0°.

6. 10. 21. Sleet and snow falling intermittently all day. Thawing at 1800. Temperature between 34·0 and 32·0°. This is the first record of sleet for two months.

8. 10. 21. In the morning snow fell heavily—slushy stuff, driven by the wind, which made our eyes smart, probably because it contained salt. Wind from northerly direction.

On one occasion (9 October) we noticed scattered over the Island small heaps of snow, the largest of which looked as if someone had been rolling snowballs. They occurred mostly on the down slopes of the Island, although we found one or two which had been rolled up a slope. The surface of the glacier slope was dotted over with these balls. They were formed in this way: a strong wind blew a small piece of snow along and this in its passage gathered up more snow, and increased in size, the final result looking like a rolled-up blanket. The three largest rolls we found close together on the west slope of the Island. Their tracks could be traced in an E.N.E. direction for about 45 feet but some smaller ones lay in an easterly direction, presumably indicating that the wind had veered between east and E.N.E. Under the conditions of temperature (about 32·0°) at that time the snow balled up very well. We actually saw some small lumps being blown along and gathering up snow on their way.

The three largest blanket rolls, one of which was almost conical, measured 2 ft. 8 in., 2 ft. 5 in., and 1 ft. 9 in. long by 1 ft. 10 in., 1 ft. 8 in., and 1 ft. 6 in. in diameter respectively.

The rolls were first observed in the morning. Later in the day we noticed that if we kicked up lumps of snow, and the wind blew them along, no balling took place. We found as a result of numerous tests that when the ground temperature was below a certain figure snow would not form into balls. It would seem that at 31·0° and above snow will ball but below this temperature it is too dry to do so.

November gave us by far the heaviest snow-fall. An indication of the quantity may be gathered from the fact that there were only six days on which snow did not fall, at any rate, for some part of the day. Add to this the fact that 95 per cent of the observations recorded cloudy or completely overcast skies and the picture of this miserable month is complete. Fortunately it was generally only moderately windy and there were periods of light winds. No rain, sleet or hail fell. The prevalent wind directions were south and south-west, with a diminution from north and north-east quarters. The low percentage of wind force above Beaufort Scale 5 is noteworthy and on only four days (6th, 13th, 18th and 29th) were there any strong winds, and these were in each case from a southerly direction.

The average temperature was a little below that of October but the maximum temperature was higher—41·5° on the 10th and 18th. The minimum reading (13·0° on the 14th) was brought about by a cold south-west wind which blew for three days. During November there were many changes in wind-direction as the following entries will show:

5. II. 21. Snow falling nearly all day. Wind tripping round compass—S.W., S., S.E., N.N.E., N.E., S.S.E., N.E., S.W., S.S.E.

18. II. 21. During night, gusty S.S.E. wind blowing about Beaufort Scale 5–6. Fine but cloudy day. Strong, gusty S.E. wind of force Beaufort Scale 5–8 blew until 1000 and then after changing to N.E., E. and E. airs it died down almost to calm for the rest of the day.

25. II. 21. Fine day with sunshine. At 2000 (on 24th) light wind from northerly direction. Then followed light breeze from south-westerly quarters up to 1400 when there were southerly airs lasting until 1700. At 1800 wind changed to N.N.W. airs and then through N.W., N., and E. to N. at 2200.

The following entries record haloes round the sun.

10. II. 21. Fine, sunny day. At 0800 the sky was almost cloudless, but cirro-stratus clouds gradually covered the sky and caused a halo round the sun. In evening a very little fine snow began to fall. Light winds and airs ranging from S. in morning to N. at 1800. Temperature between 32·3 and 28·7° during day.

15. II. 21. Fine, sunny day with cold S.W. wind blowing. Visibility very good. Halo round sun at 1800 caused by the presence of cirro-stratus clouds. Temperature between 23·0 and 17·3°.

In December the weather showed signs of improvement, but it was nearly always dull and overcast. Wind, which came mostly from the south and south-west, but with increased tendency towards the north and north-east, was generally below Beaufort Scale 4. Only one day (the 4th) was gusty—in this case the wind arrived from easterly quarters. Percentage of snow-fall was low, though actually snow fell on eleven different days. Between the 13th and the 26th there was no snow. The first record of rain occurred on the 13th. December had the second best weather record and the lowest percentage of completely overcast skies. A

thick fog was recorded on the 17th. The average as well as the maximum and minimum temperature was about equal to that for January and February. Entries from my diary give an idea of typical days:

2. 12. 21. Dull and gloomy up to 0600. From 0800 to 1600 we had fine, very warm weather with sunshine nearly the whole time. Sky was, however, cloudy. From about 1700 onwards weather changed to overcast with nimbus clouds. Light breezes, winds and airs from northerly quarters. Temperature between 41·5° (at 1400) and 33·1° (at 0000).

16. 12. 21. Very fine. Almost cloudless. Hot, with sunshine all the time. Airs from varying directions. Maximum temperature registered was 47·5°, minimum temperature 31·0°.

22. 12. 21. Midsummer Day. Cold and damp. Low clouds covering the whole sky and not a glimmer of sunshine.

24. 12. 21. Fine, warm, sunny with very little wind. Clouded over in evening. Temperature between 40·5 and 29·0°.

We were still at Water-Boat Point for the first fortnight in January 1922 and the weather was of a varied character, mostly rather bad. Out of the fourteen days four were fine or fairly fine. Gusty weather came from the east and south-east. Snow, rain, sleet and hail fell most of the time. There was a hail storm on the 2nd and rain during most of the 4th. I recorded on the 13th that 'in twenty-two days we have had one day of really fine weather!'

My companion sums up the year in the following words:

Throughout the whole of the year, except for the month of August, the wind came frequently from the north-east quarter, bringing with it snow and thick weather. It was almost invariably heralded by a falling barometer and a rapid rise in temperature. Similarly, a rising glass and a fall in temperature warned us of the approach of a south-west disturbance, and it seemed as if the

wind from this quarter sent all the snow and thick weather, which came from the north-east, back again.

Sudden changes in the direction of the wind were frequent, and from no quarter could it be said that it blew steadily for any length of time; it was nearly always gusty, and the gusts from the south-east, and especially from the east, were the most violent of them all. This, as already explained, was probably due to the mountainous surroundings in which we lived.

SOME NOTES ON THE WEATHER CONDITIONS EXPERIENCED AT NANSEN ISLAND

15 January to 29 March, 1922

We carried out no systematic observations at Nansen Island but some of the notes which follow will give a general idea of the weather conditions which were obtained there during the whaling season.

The second half of January was, like the first, mixed—mainly very dull, with a good deal of snow. On the 15th and 16th snow and rain fell almost incessantly. There was very little wind except for a gusty north-east breeze on the 24th.

February was a month with very little wind except on the last day when a gusty westerly wind sprang up, but snow, sleet or rain fell during twenty days, sometimes all day, sometimes part of the day only. On the 15th the following note appears in my diary:

15. 2. 22. Snow has fallen all day. No wind. Very bad weather at Deception Island, much worse than we are having here. A strong N.E. wind prevented the whalers leaving the harbour from 10 to 14 February. We have had bad weather during that time, but no wind.

During March we made two whaling trips. The first and longest was from the 4th to the 10th. The following entries give an idea of the weather we encountered in De Gerlache Strait:

4. 3. 22. Very bad weather in morning. Strong wind varying from N., N.W., to N.E. with heavy snow. Improvement in afternoon, but about 1900 a squall approached from N. Calm evening.

5. 3. 22. Clear day with sunshine in morning and early afternoon. Cloudy later. Strong S.W. wind during most of day, calming in evening.

6. 3. 22. At 2200 (on 5th) snow started to fall and continued throughout the night. Early morning foggy and poor visibility throughout the day. In early morning a moderate breeze from the N.E. was blowing. This dropped to a light breeze about 0900. Spells of sunshine during day. Wind changed to S.E. about noon and in evening to S.W. Temperature (at 1000) was 35·0°.

7. 3. 22. Dull but warm. In afternoon and evening snow, hail, sleet and rain fell. Visibility bad. Variable light wind from northerly quarters.

8. 3. 22. Gusty, with a heavy sea. Cloudy with spells of sunshine. Wind from N.W. strong until 1600 when it changed very suddenly to a powerful southwester with gusts. From 1630 until 1700 there was a distinct rainbow between the middle of Charlotte Bay and Cape Murray, of which the ends only were visible. This is the first rainbow Lester and I have seen here, but the Captain of the *Graham* told us that he had seen two already this season, neither complete arcs.

9. 3. 22. Dull and foggy in morning and afternoon. Sunshine in middle of afternoon. Fine evening, but cloudy. Light S.E. wind in evening. Temperature at 1600 was 32·8°.

10. 3. 22. Snow has fallen throughout the day.

The weather was bad for the next thirteen days with the exception of three. What wind there was was mainly from southerly quarters. A good deal of snow fell. The temperature varied from about 28·7 to 20·0°. An idea of the very local weather conditions which are met with in these regions may be gathered from the following three diary entries:

17. 3. 22. Dull day and snowing all the time. Light south-westerly wind. Temperature at 2000 was 20·0°. Outside in the De Gerlache Strait there has been a N.E. gale blowing.

19. 3. 22. Snowing throughout the day. Moderate N.E. breeze blowing in harbour while outside (in De Gerlache Strait) there is a gale blowing. Temperature at 2000 was 26·0°.

20. 3. 22. Very bad weather. A breeze from N.E. blowing in harbour, while outside in the Strait a gale is raging. Snow has fallen throughout the day. Temperature at 2000 was 28·7°.

The remainder of the month was mainly fine with an appreciable amount of sunshine. Any wind there was came principally from southerly quarters. The temperature ranged from about 27·7 to 23·0°. We left Nansen Island on the 30th, and in the afternoon, when we were between Smith Island and Snow Island, we noticed for the first time snow falling in the form of needle-shaped crystals (Ice Needles), about $\frac{1}{8}$–$\frac{1}{12}$ of an inch in length.

Appendix B

ICE OBSERVATIONS

ICE CONDITIONS AT WATER-BOAT POINT

GENERAL NOTES[1]

Although throughout the winter the temperature was, with few exceptions, very much below 32° F., yet the channel to the north of our base was, except for drift and brash-ice which occasionally filled the place, in a continual state of open water, and everywhere to the north, as far as we could see (i.e. to the main De Gerlache Strait), it appeared to be the same. It was only to the south that a permanent freezing over was evident. Unfortunately we were not in a good position to study ice conditions very closely in the main De Gerlache Strait, and it is probable, therefore, that our notes and ice charts show only local results. We observed as far as was practicable the varying ice conditions in the Strait, and a systematic record of its movements, for certain periods, was kept.

We could see two sections of the main strait, one by way of a channel which divided Lemaire Island from Bryde Island (which we called Bryde Channel), the other between the north-east point of Lemaire Island and De Rongé Island (also called Rouge Island or Cuverville Island), opposite to the entrance to Andvord Bay. Later, when we were with the whalers, we collected many more notes on the ice conditions in the De Gerlache and Bransfield Straits.

About four days after our sledging expedition on 24 August wide leads became visible in the ice, and these open-water

[1] Based on M. C. Lester's account in *The Geographical Journal*.

channels were quickly followed by a general dissolution; seven or eight days after our journey the ice had almost entirely disappeared. This ice took the northerly course usually taken by the unattached masses, where it probably joined the main-channel ice, which, unless influenced by adverse winds, is carried with the north-easterly set of current clear of the straits.

The currents all set northerly and easterly; it can safely be said that in no place do they exceed 2 knots, and usually they average only from about ½ to 1 knot.

ICE LOG (WATER-BOAT POINT)

January and February 1921

On the way down from Deception Island to the base there was a good deal of loose ice about, both in Bransfield Strait and De Gerlache Strait, but, although care had to be taken, there was not sufficient to stop our progress.

We landed at Water-Boat Point on 12 January. From that date ice conditions were perfectly safe for navigation. At no time was there enough ice to impede a ship's passage. The occasional icebergs and what little ice there was generally drifted northwards, unless influenced by adverse wind or incoming tide.

During these months we frequently heard a gun-like boom as glaciers in the neighbourhood calved fragments. Sometimes we even felt a swell as a result of the fall. A good deal of the loose ice in the Channel[1] was no doubt accounted for by these falls.

We visited Andvord Bay on three occasions in February. This bay seemed under conditions of south, south-west, and westerly winds to become the congregating place of ice passing up channel towards the north by our hut. On the 18th we

[1] The 'Channel' lay between our base and Lemaire Island.

found so much ice there that we could not reach the lower end in the life-boat, although in the main channel there was no ice worth mentioning.

March 1921

At no time during March was there sufficient ice to hinder navigation. At times there was a fair amount of small ice floating in the Channel and to the north and south. The preponderance of the ice observed tended to be towards the north and north-west rather than to the south. The heaviest ice and greatest number of icebergs appeared in the area to the north-west nearest to the De Gerlache Strait.

It was noticeable that there was a greater amount of ice and a larger number of icebergs about than in the first two months. With rare exceptions icebergs were of medium or small size and usually irregular in shape. A few largish ones were seen to the north and north-west. Only on three occasions were tabular bergs observed. Although these bergs might drift a little southwards, or become stranded for a few days, they eventually, like the smaller ice, drifted northwards.

The first evidence of new ice appeared on the 3rd when the Channel was covered with thin 'pancakes'. Although new ice appeared on Life-Boat Bay and was sometimes observed drifting in the Channel it could not be considered as anything but a temporary freezing. In fact the ice in the Bay was only in a thin 'pancake'[1] state even at the end of the month.

April 1921

As in March, on no single day was there sufficient ice about to have caused inconvenience to navigation. In fact,

[1] Surface disturbances of the water will cause new ice to break into hexagonal discs from an inch to several feet across. As these discs are hustled together, their sides are crushed and broken, and are curled up by the pressure. Each has a flat interior and a bruised turned-up edge like a pancake. This ice is known as 'Pancake ice'.

if anything, there was less small drift-ice about, particularly to the south. The icebergs of any size were all towards the north and north-west. The greatest number seen on any day was two large and a dozen medium ones, all to the far north. Bergs were mostly badly weathered but on five occasions tabular ones were seen.

Only on two days (1st and 29th) were glacier falls heard in the district.

No freezing over in the Channel was recorded except on the 3rd when there was new ice to the south of a line between the base and Lemaire Island. It was soon broken up however and taken away by the current. Even Life-Boat Bay did not freeze over permanently and at the end of the month it was only full of 'pancakes' which had drifted in from round about.

May 1921

Very little drift-ice was seen during May, except on one day. Comparatively few icebergs were seen, though nearly always up to four large ones could be seen to the near north and far north. A large tabular berg was seen on the 7th and several of the same kind on the 19th. The remainder were all irregularly shaped.

The beginning of the month saw the end of glacier falls for a time.

During the month a good deal of broken up new ice in thin sheets was seen floating in the Channel. The lower temperatures, however, had not yet beaten wind, tides and current, and subdued the surface of the sea.

June 1921

Although throughout the month of June a good deal of new ice was to be seen floating about in sheets or large 'pancakes' in the Channel, there was, nevertheless, no

permanent freezing over. Generally speaking there was only a little drift-ice either to the north or south.

With spells of higher temperatures five glacier falls were recorded, all from Lemaire Island. A small iceberg stranded close by our island calved on four occasions between the 21st and 22nd when the temperature rose to above freezing point.

Icebergs were more frequently seen, especially to the near and far north. Generally they were irregularly shaped, weathered ones, but on three occasions tabular bergs were observed. The greatest number of large bergs seen at one time was four. There were usually a few medium and small ones around each day.

July 1921

The ice conditions in July are clearly shown in the log entry supplied by my companion for the 28th:

To the south, as far as the eye can see, the Channel has been frozen over for the last ten days. To the north of a line running due west of the meteorological screen several gaps of open water have been observed, and there are still several today. This sheet of ice goes as far north on an east and west line as about half-way between the base and Shag Point. The ice does not appear to be thick. Assuming the ice conditions in the channel between Bryde Island and Lemaire Island to be favourable, this latter channel being much wider, I think that it would still be possible for a ship coming up from the south to round the south-east corner of Lemaire Island and proceed north through the present ice.

There was about the same number of icebergs as in June. They were not numerous, only a dozen or so being seen at any one time, and mainly confined to the north. On eleven occasions large tabular bergs were observed but in the main they were irregular in shape. As usual they eventually disappeared northwards. Ice flowers were seen on the 21st, 26th and 31st.

August 1921

On the 2nd I recorded that as a result of low temperatures and the fact that a strong south-west wind had not removed the main mass of new ice to the south, south-west and west, it seemed probable that a ship would have been unable to pass through. Also it seemed certain that there was much new ice to the south beyond our range of vision. To the north, as far as we could see, the channels were clear of ice. We could not tell if Andvord Bay was frozen in.

On the 3rd there was a marked swell which passed under the floe ice to the south and off the hut, plainly showing its presence under the ice near the shore. Great straining took place, and ice cracks formed parallel and close to the shore. Rocks were observed suddenly to pierce the sheet near the shore. In the afternoon of the same day we walked 1000 feet or so southwards on the sea ice near the shore. The ice had a slushy appearance and there were many cracks. It could scarcely be considered safe for walking on.

On the 16th, about 6 p.m., we heard to the north a distant roar which suggested pressure on ice by swell.

During August the maximum safety of the new ice was reached. On our journey 5 or 6 miles south on the 24th we found the sea ice a little slushy in parts and there were occasional pools of water on the surface. Tidal cracks were numerous near the shore. We noticed that since the sea ice had been formed numerous glacier falls had taken place, thus accounting for the glacier débris on the floes which we saw later on. The new sea ice extended all the way to the south and west as far as we could see and was safe for travelling on. To the south-west of the hut was an area of new ice, frozen-in fragments of bergs and lumps of drift-ice. All the way south we could see small icebergs and drift-ice frozen in the new ice.

On the 31st a gusty south-east wind and higher tempera-

tures caused the new ice to retreat a little southwards and we formed the impression, from visibly rotten patches, that it was unreliable, if not unsafe. No doubt further south it was firmer.

The extreme limit to which the firm new ice had ever reached northwards was to a line extending westwards from the north point of the base to Lemaire Island.

Nothing of interest was recorded as far as icebergs were concerned. There were usually three or four large ones to the north-west beyond the north point of Lemaire Island. Bergs were mostly of irregular shape although on three occasions large tabular ones were recorded. Medium and small ones appeared sometimes to the north and north-west. As the south and south-west were frozen over there was no movement of bergs in these directions. On a clear day three medium-sized and a fair number of small ones were seen to be frozen in.

Glacier falls were recorded on several occasions throughout the month. Ice flowers were seen on eleven days.

September 1921

September might be termed the month when the sea ice sickened prior to its final collapse. By the 2nd the sea ice to the south and south-west was deteriorating into a bad condition and pieces were also breaking off the ice-foot.[1] A lead of water with no broken-up ice in it had opened near the south point of the base, widening out to the south and averaging about 20 feet wide. This extended along the shore at the foot of the Glacier, though not closely, as far as we could see southwards, where it was filled with small floes and averaged about 100–120 feet in width. At the furthest visible point it cut close to the Glacier foot and prevented walking there. From this point a long patch of rotten ice

[1] Denudation of the ice-foot went on slowly but surely from the beginning of September. By 1 January 1922 disintegration was complete.

extended to the edge of the ice-sheet in about the middle of the Channel. This, with the lead by the Glacier, cut off a large section of the ice-sheet. The ice over the rocks near the Glacier was 26 inches thick, 15 of which consisted of sea ice and the rest snow-drift. The ice was therefore treacherous and sledging would have been dangerous, if not impossible. The thickness of sea ice (15 inches) must have represented the average thickness, at any rate near the shores.

Later in the same day another lead appeared and liberated small floes from the Glacier lead into the main open Channel.

By the early morning of the 3rd the severed section of the ice-sheet mentioned on the 2nd had gone and open water extended from the Glacier (at the farthest point of visibility to the south) westwards to the south point of Lemaire Island. Any idea of sledging southwards was impossible.

A medium-sized berg which had been frozen in to the south-west was released from the new ice and moved off northwards. The new ice remained in about the same state until the middle of the month when the north edge broke away leaving the edge shaped in a semicircle from South Island to the south past Bryde Island, across Bryde Channel to the south point of Lemaire Island.

On the 20th we saw a Fin Whale swim down the Channel and make for Bryde Channel, thus showing that the way was clear in that direction and that probably only a bar of brash-ice lay from the south point of Lemaire Island to Bryde Island. We could see open water in Bryde Channel. Three days later we recorded that the ice to the south was in the same condition but much had been carried away from the edge.

From the 1st of July onwards we had a medium-sized berg under observation to the far south. It was still there on 17 September, but had gone by the 27th, evidently northwards. A large berg also appeared to the south on the 26th, and on the 30th a large irregularly shaped berg came up from

the south and made off north. All these indicated breaking up to the south.

On the 26th, a strong southerly wind caused brash-ice to block the Channel and also the area to the south and south-west. A lot of it was composed of small sheets of broken-up sea ice. Next day visibility was better and we could see that the pack with many 'bergy bits'[1] lay as far to the south as our limit of vision. It had for a north edge a line joining South Island to Lemaire Island and was sufficient to prevent navigation through to the channel between Bryde Island and the mainland. Open water was visible in Bryde Channel, and a ship could have passed through the little ice that lay in that direction. At midday the main mass of pack ice was moving north but slowed up in the late afternoon.

Next day (the 28th) the accumulation had been dispersed towards the north. From the top of South Island I had a good view of conditions to the south as visibility was unusually good. Bryde Channel showed open water. Following the mainland to the far south and in the channel between Bryde Island and the mainland there appeared still to be fixed sea ice. North of this was a belt of open water lying east and west, then a belt of close brash-ice which continued across Bryde Channel. Next came more open water. The ice to the south seemed to have been knocked about considerably by a recent south-west gale.

A hole chipped through the ice in Life-Boat Bay on the 29th gave a depth of snow-drift and ice of 3 ft. 5 in.

Much more pack with fragments of bergs came up from the south on the 29th and 30th. It all moved north, at times rapidly, but was not sufficient to prevent navigation to the north.

Conditions to the north varied during the month. Generally there was quite a lot of brash visible, particularly

[1] Fragments of bergs.

beyond the north-east point of Lemaire Island. The near north was often almost clear of ice.

There was a tendency for icebergs to be more frequent during September. The large bergs always (except the records of the 26th and 30th) appeared to the far north, N.N.W., and north-west. The largest number seen on any one day was ten (25th). The usual number was two or three. Bergs of medium and small size were common. These together with brash-ice came from the main De Gerlache Strait and whilst they might occasionally drift a little south as far as Shag Point they eventually disappeared north and east with the general set of the current. No doubt between wind influence and set they were trapped in the angle formed by the northern shores of Lemaire Island and the southern ones of De Rongé Island. Three large tabular bergs were recorded.

Glacier falls were heard on twelve days. On one day (the 8th) there was visible refraction to the north. Ice flowers were seen on the 8th.[1]

October 1921

There must have been an increase in the breaking up of the ice to the south in October because from the beginning of the month medium-sized bergs began to appear from the south-east and south-west. On the 3rd we were able to see that the open water of Bryde Channel was connected with that in the Channel (i.e. between the base and Lemaire Island). Through this channel bergs and drift-ice could now come from the main De Gerlache Strait (in the direction of the coast of Wiencke Island). A large iceberg which arrived on the 3rd at the entrance to Bryde Channel must have come through it. On the 8th a large, well-shaped, tabular berg was seen near the shore of Bryde Island. This, too, must have come through Bryde Channel. We lost track of it after the 12th.

[1] Our last record of their occurrence.

Brash-ice came up from the south intermittently but from the 14th to the 28th to the south and south-west there was usually a considerable amount of close heavy brash and pack ice which eventually moved up channel, indicating part of a break-up to the south. It consisted of flat and hummocky floes mostly of smallish size, and also bergy bits, slushy sea ice and much ice-foot débris. The first floe of any size appeared on the 20th, and measured about 300 by 50 yards. Two days later one about 250 by 50 yards drifted by and the next day two more of the same size passed. On the 25th we saw a floe measuring about 300 by 50 yards and on the 31st one about 100 by 50 yards came past from the south.

Only once, on the 20th, did I record sufficient ice to prevent navigation, though on other days it was doubtful if a ship could have been safely navigated owing to the swift current which gave the ice additional power. I do not think a ship could have got far south. Bryde Channel showed clear water on and off but no doubt there was a good deal of heavy ice in the main De Gerlache Strait.

Ice conditions to the near north were never very serious, but to the far north or, in other words, in that section of the De Gerlache Strait which was visible to us between De Rongé Island and Lemaire Island, there always seemed to be much ice. As usual it was mostly in this direction that the large bergs were seen. We counted nine large ones on the 31st. Six records of large tabular bergs were obtained, two being from the south from which direction medium and small ones also appeared more frequently from the 1st onwards. What happened to three large bergs seen to the south on the 3rd, 8th and 30th, I cannot say. They must have drifted out through Bryde Channel into the main Strait. They could not have passed through the channel between our base and Lemaire Island very easily without running aground.

Two seal blow-holes in Life-Boat Bay, examined on 12 October gave the following sections:

	Hole 1	Hole 2
Snow and drift ..	1 ft. 5½ in.	1 ft. 7 in.
Slush ice	5½	1 5
Solid ice	1 10	1 3
Total	3 ft. 9 in.	4 ft. 3 in.

Four measurements taken in Glacier Bay on the 20th all revealed 1 ft. 4 in. of sea ice. The depth of snow and drift varied between 1 ft. 6 in. and 4 ft.

On 18 October I measured a number of small floes stranded on the shore. The results are tabulated below.

Size	Thickness of sea ice	Notes
ft.	ft. in.	
17 × 11	1 11	
15 × 10	0 9	Glacier débris on top
14 × 10	1 8	,, ,,
11 × 6	4 0	Part of ice-foot
10 × 6	2 4	Glacier débris on top
8⅓ × 7	2 3	,, ,,
5½ × 4½	1 9	
5¼ × 3½	1 9	
5 × 3	1 3	
4 × 3	1 7	

Glacier falls were heard on seven different days, five of which were in the first fortnight of the month.

November 1921

Only on five days (2nd, 9th, 14th, 15th, 19th) was there much drift-ice or pack ice seen and conditions during the month gave the impression of periodical disgorgings of ice from the south. Navigation, except on an odd day or two, was quite possible. Floes, when they occurred, were smaller. One seen

on the 3rd measured 100 by 50 yards, whilst another seen on the 13th measured about 70 by 18 yards. A third seen the next day was some 150 by 50 yards.

Although icebergs were more numerous there was less pack and brash-ice than the previous month to the far north and north-west, thus indicating that there was less in De Gerlache Strait. This was confirmed by observations on Bryde Channel which was generally clear.

As already mentioned, icebergs were more numerous to the far north and north-west. We counted eleven of various sizes on the 1st, about twenty on the 8th, seven large ones on the 20th, and as many as twenty-one on the 29th. Even to the south and south-west there was an increase in number. One interesting berg movement was observed. A large well-formed tabular berg was seen to the south on the 17th. We watched it on the 18th and 19th. After moving a little east it moved a little north on the 20th, then westwards towards Bryde Channel, and finally into De Gerlache Strait.

Altogether five tabular bergs were observed, two to the far north, the other three to the south.

On the 17th the floe which had at one time formed the firm sea ice in Life-Boat Bay and which had severed from the shore, moved out of the bay into the Channel.

On twelve days glacier falls were recorded, and towards the end of the month they became more numerous. On the 28th, six falls took place on Lemaire Island alone.

December 1921

Ice conditions in December were an improvement on those of the previous month and again gave the impression of periodic disgorgings from the south. There was not always uniformity between the amount of ice in the main De Gerlache Strait and what was to be seen around our base to the near north, south and south-west. Thus on the 1st, whereas there was only scattered brash-ice immediately

around us, there was the appearance of close brash-ice or even pack in Bryde Channel, De Gerlache Strait, and to the far south. From the 2nd to the 6th there was practically no ice around. Then on the 7th there was very little around us but through Bryde Channel we could see a great deal in the main Strait. From the 8th to the 14th it was still practically clear of ice in the vicinity of the base although on the 13th we could see a stream of at first loose, but later close brash-ice in the main Strait, and on the 14th there was loose brash in the Strait all day, visible through Bryde Channel. On the same day (14th) to the far north, as well as in De Gerlache Strait, pack ice could be seen at 8 a.m., loose brash-ice at 2 p.m. and pack again at 8 p.m. This indicated that varying amounts were passing up the Strait, not an even flow.

On the 15th there was only scattered brash-ice in the near vicinity of the base but loose brash-ice was visible all day in the Strait through Bryde Channel. In the section of the Strait visible to the far north loose brash-ice was visible at 2 a.m. and 2 p.m. and heavy brash or pack at 8 a.m. and 8 p.m. There was also the appearance of close brash to the far south. Much the same conditions continued on the 16th.

From the 17th to the 27th to the near north, south and south-west as well as in the Channel it was at times almost clear of ice. As a contrast, on the 17th (close), 18th (loose), 19th (close), 20th (loose), and 21st (close) ice was observed in De Gerlache Strait either to the far north or through Bryde Channel.

On the 18th a whaler was able to get down to us from Deception Island to relieve us. It was, however, a lucky trip in between spells of good and bad ice conditions.

On the 28th there was much close brash-ice to the near north and to the far north in the main Strait but practically clear elsewhere including that part of the main Strait visible through Bryde Channel. It was a little worse on the 29th, 30th and 31st, when there was close brash-ice or pack to the

north and in both sections of the Strait, sufficient to prevent navigation.

As was to be expected, not so many bergs were seen, particularly to the far north. Visibility was not always very good but the most we saw at any one time was three or four. On some days none were visible. On four occasions tabular examples were seen, always, except in the case of one small one, to the north.

Glacier falls were heard during the first sixteen days quite frequently. On the 16th as many as sixteen were recorded mostly from Lemaire Island. Three occurred on the 19th and then I have no notes of any until the 26th when there were several in one day.

January 1922

Observations were continued at Water-Boat Point up to 13 January 1922. During the first six days of the month conditions were mixed and a good deal of close brash-ice was to be seen either to the far north or to the far south. On two days there was a good deal of ice visible in De Gerlache Strait through Bryde Channel, corresponding to that visible to the far north. On one day (3rd), whereas there was close brash-ice visible in the northern section of the Strait, there was only scattered ice in the southern section.

For the remainder of the time there was very little ice visible in any direction.

On the 4th there appeared a very large floe which stretched across the Channel from the north-east point of Lemaire Island to Shag Point, completely blocking the way. It was by far the largest we ever saw. It remained there on the 5th, 6th, and 7th, but disappeared westwards on the 8th, driven by a strong easterly wind.

Two or three glacier falls occurred on the 5th and a series of small ones and one large one on the 12th. All took place at Lemaire Island.

ICE CONDITIONS AT NANSEN ISLAND

GENERAL NOTES

The following information was obtained from Captain Andersen of the *Svend Foyn I* regarding the ice conditions that had been met with by the whaling factories on their way to Deception Island which they reached on 25 November 1921.

The *Ronald* met ice 20–25 miles north of Smith Island and followed it for 20 miles. The *Svend Foyn I* met close pack in a line from Cape Melville (King George Island) to Bridgman Island, stretching to the south as far as the eye could see. Leads were visible and through these the ships were able to reach Deception Island. All were damaged by the ice.

Captain Larsen of the *Falk* told us that in the middle of February a whaler went as far as Antarctic Sound (in sight of Hope Bay) but ice prevented it from entering the Weddell Sea.

ICE LOG (NANSEN ISLAND)

January 1922

We arrived at Nansen Island on 14 January 1922. We were informed that for the previous week a whaler had been unable to proceed from Nansen Island to Water-Boat Point owing to bad ice conditions. The factory *Solstreif* had not yet managed to move to Port Lockroy for the same reason.[1] According to Captain Andersen it was not until the beginning of February that a factory could safely proceed to Port Lockroy.

From the time of our arrival at Nansen Island until the end of the month there was very little small ice in Wilhel-

[1] She eventually gave up the idea of going there and remained for the greater part of the season at Nansen Island.

mina Bay. Various reports obtained from the whalers gave us an idea of conditions in the main De Gerlache Strait. Thus on the 15th one of the whalers reported that close ice stretched from the Schollaert Channel to Cape Anna, blocking the way to Water-Boat Point and Port Lockroy. Again on the 18th it was reported that there was much ice visible to the south in De Gerlache Strait but none to the north. Reports on the 24th, 27th, 29th, and 30th all gave the Strait as clear of small ice.

There were icebergs to be seen always, almost invariably of medium or small size and all of irregular shape.

February 1922

Throughout February very little small ice was seen either in Wilhelmina Bay or in De Gerlache Strait, a section of which was visible to us when the weather was clear.

On the 6th a whaler reported that the Neumayer Channel was clear but to the south of Port Lockroy there was heavy pack. The captain of the *Falk* went into the Schollaert Channel on the 11th to visit Larvik Harbour in Anvers Island and reported much ice to the west of Anvers Island but practically none in De Gerlache Strait. On the 12th, 19th, and 27th whalers reported the De Gerlache Strait clear of small ice but said that numerous icebergs lay about. Icebergs were, in fact, numerous every day but those around Wilhelmina Bay were always of medium or small size and irregular in shape. We never saw a large one in this bay although occasional large ones were seen in the main Strait.

March 1922

Up to March 15th there was practically no small ice about either in Wilhelmina Bay, De Gerlache Strait or even in Bransfield Strait within sight when out whaling. We were out in De Gerlache Strait from the 4th to the 11th whaling within the area of Liège Island, Christiania Islands (Inter-

currence Island and Small Island), Brialmont Bay, Two Hummocks Island, Cape Murray and Cape Kaiser.

Much ice was seen in De Gerlache Strait on the 16th and 17th but for the rest of the month there was practically none about (reports received 18th, 19th, 20th, 21st, 22nd, 24th, 25th, 27th). We were whaling again on the 24th and 25th, so were able to verify this. Had there been much ice in Bransfield Strait it would have made itself apparent on the 20th when a north-east gale was blowing, but none appeared.

On the 22nd a whaler reported much ice in De Gerlache Strait to the south of Cape Anna. There was none to the north.

Icebergs were numerous the whole month through but mostly of medium or small size. We counted as many as forty at one time in De Gerlache Strait. We watched a large, irregularly shaped one for nearly six weeks. It hung about between Cuppel Island (or Delaite Island) and North Nansen Island, moving backwards and forwards north and south. A very large tabular one was seen beyond Liège Island, in Bransfield Strait, on 5 March. It was the largest one we ever saw in our part of the Antarctic and measured perhaps 2 miles in length. Another large tabular one was seen in Bransfield Strait on the 8th while we were out whaling. A large, irregular one seen on the same day in De Gerlache Strait showed a marked movement up the Strait on the 9th. On the 11th we saw it lying midway between the south-east point of Two Hummocks Island and Cape Murray, indicating a N.N.E. movement. It was seen again by the captain of the whaler on the 17th, when it was moving south owing to a north-east gale in the Strait. The last time it was seen was on the 21st when it was going southwards past Nansen Island. No doubt it eventually moved off north-east again before finally being carried away in Bransfield Strait.

Conditions in the harbour at Nansen Island were poor between the 18th and the 24th when a good deal of small ice

(mainly glacier débris) was blown inshore by a strong north-east wind. It cleared away afterwards.

From the 15th thin new ice began to form but was soon broken into 'pancakes' and small sheets. On the 22nd there was a thin scum of new ice between the ships and on the 25th I noted that all over Wilhelmina Bay and in the harbour there was new ice in thin sheets and small 'pancakes'. It was cleared away by the current during the following two days.

We left Nansen Island on the 30th and saw practically no ice from there to Smith Island and northwards. A few bergs were visible, including a large tabular one seen off the north point of Liège Island.

On the 31st we were at noon in Lat. 60°40′ S., and Long. 67°7′ W. Not a piece of ice had been seen since the previous day and after this we lost sight of ice entirely, including icebergs.

GLACIERS

We made some measurements of the height of the glacier front to the south-east of the base. The average of six measurements gave a height of 110 feet. The highest reading was 133 feet and the lowest 78.

We were able to study the glacier face more extensively when we made our journey south on 24 August. It was found to keep its height throughout the 5 or 6 miles we travelled, although at one place about 3 miles away it was so rounded at the edge that we could have walked up it. At this point there was a small bay and the glacier retained its height inside the bay. At the southern extremity of our journey the height lessened a little. At several places we observed patches of ice 'breccia'. Sometimes the front of the glacier was smooth but as we progressed south it became very much weathered. The base was obscured by an ice 'talus' and snow slope. A little way south we saw a cave

in process of formation. Semicircular and vertical cracks had combined to break up a portion of the face (foot) into blocks which the sea would gradually carry away.

At two places near our southern limit we found a little englacial débris in the form of small rocks and mud in layers in the glacier front.

ICEBERGS

We frequently had icebergs of medium or small size remaining for quite long periods off our island and also off Lemaire Island and De Rongé Island. These were stranded on the submerged shelves which surround the islands. As will be seen from the Ice Log, the records of large bergs were mostly from the far north.

Occasionally we had a good opportunity of obtaining approximate dimensions of stranded bergs. One measured on 25 June 1921 was 800 feet long and 200 feet high. A small berg seen on 1 July was 150 feet long by 20 feet high. A large irregularly shaped berg seen on 2 July we estimated to be 600 feet long by 150 feet high. A medium-sized berg stranded off Coal Point on 14 August measured 220 feet long by 50 feet high. A long low one which was near the base on 20 October was about 300 feet long by 30 feet high.

Whilst we were out whaling on 5 March 1922, we saw in the distance beyond Liège Island, in Bransfield Strait, a very large, symmetrical, tabular berg. It was the largest we ever saw in our sector of the Antarctic. We estimated it to be about 2 miles long. On our journey homewards on 30 March, when we were off the north point of Liège Island we saw a large tabular berg divided by a gap in the middle making it into a double berg.

Appendix C

TIDAL RECORDS

Two sets of tidal observations were made. The main one was at Water-Boat Point from 31 October till 16 December 1921. During this period hourly observations were made during the night and day from 31 October to 6 November, during the day only from 7 November to 15 November, and during the night and day from 16 November to 16 December.

The second set was made between 24–27 February 1922, at Svend Foyn Harbour, Nansen Island.

Both sets of observations have been examined by the Liverpool Observatory and Tidal Institute at Birkenhead and the records themselves have been deposited at the Scott Polar Research Institute at Cambridge.

The Harmonic Constants (Graham Land, Lemaire Channel) have been published in the International Hydrographic Bureau Special Publications, No. 26.

Appendix D

ZOOLOGICAL NOTES

INTRODUCTORY

These notes were made at the following stations:

Deception Island, 20 November 1920, to 11 January 1921. Water-Boat Point, 12 January 1921, to 13 January 1922. Nansen Island, 14 January 1922, to 29 March 1922.

No attempt is made to describe details of measurements, plumage, and so on. Neither Lester nor I had previous knowledge of watching birds and mammals, and certainly none of taxidermy or anatomy. This made things difficult for us. The two Charcot expeditions and other observers have given ample details of this kind, so our own notes need do little beyond supplementing theirs.

Doubtless the lives of scavenging birds such as Cape Pigeons, Dominican Gulls and even Wilson's Petrels were influenced by the location of the whaling harbours at Deception Island, Nansen Island and Port Lockroy, for these easy sources of food attracted the birds in great numbers.

We were making day and night tidal observations at Water-Boat Point from 31 October to 6 November and from 16 November to 16 December 1921, and were therefore able to study the animal life in some detail. Observations were made hourly and on each trip to the tide-pole we noted the birds and mammals seen as well as their numbers and any interesting details of behaviour. Throughout the rest of the time we were there notes were made at each visit to the meteorological screen (see Appendix A).

In some cases where the pronoun 'I' is used it refers to Lester who gave me considerable help in recording these notes.

A copy of the complete notes has been deposited at the Scott Polar Research Institute at Cambridge. Those which follow have been considerably condensed.

I am greatly indebted to Mr B. B. Roberts and Mr G. C. L. Bertram, the naturalists of the British Graham Land Expedition, 1934–7, for giving me much help in the arrangement of these notes.

BLUE WHALE (*Balaenoptera musculus*)

We saw only four Blue Whales while we were at Water-Boat Point, although one or two of the records under 'Doubtful Species' may have been of this species. One was recorded on 10 June, two on 14 December and one on 20 December 1921.

FIN WHALE (*Balaenoptera physalus*)

During our time at Water-Boat Point we saw small numbers of Fin Whales in every month of the year, although there were single observations only recorded in the months of August, September and November and two in December.

On the side of a Fin Whale caught while whaling from Nansen Island about 4 March 1922, the captain of the *Graham* noticed a solitary barnacle. This, he said, was the only time in his whaling experience that he had ever seen a barnacle on a Fin Whale.

HUMPBACK WHALE (*Megaptera nodosa*)

When we were at Deception Island during the season 1920–21 we saw a few of these whales brought in.

At Water-Boat Point we did not see a single Humpback.

During our two whaling trips from Nansen Island we saw occasional Humpbacks.

On the evening of 9 March 1922, there were about a dozen in pairs round the entrance to Buls Bay. They were making a noise like whistling. Two were apparently engaged in sexual intercourse, one of them being nearly on its back with its right fin in the air and its white belly showing. The pair were together for a short while.

KILLER WHALE (*Orca gladiator*)

We saw Killer Whales at Water-Boat Point on several occasions in November, December and January. On 14 November, 1921 we noticed five of these whales swimming around the edge of a large floe in the Channel for a few minutes evidently in search of seals. They eventually made off north. Three were large whales about 20 feet long. Their long dorsal fins were particularly prominent. Two must have been calves, for their fins were small and they were only about half the length of the other three. They were accompanied by about fifteen Dominican Gulls and a Brown Skua which no doubt knew the habits of the Killer and hoped for a share in the leavings.

At noon on 8 December 1921, we noticed half-a-dozen in the Channel not far from the hut. They sometimes came within 150 feet of the ice-foot and must have been swimming in quite shallow water. They kept rising with their heads well in the air as if they were standing up in the water as a Leopard Seal does when it is looking for penguins. They were evidently searching for food and were attracted by three Weddell Seals, two of which were lying on a floe with the third on a large piece of ice close by. Their unusual coloration and long, prominent fin gave them a most ferocious look. At times the whales rose quite close to where the seals were lying. Again and again they pushed their ugly heads out of the water and we could see the roundish white patch over the eye, and, when they dived, the white patch

behind the fin. Their eyes seemed to be very small. We did not see them open their mouths and therefore missed the sight of their formidable teeth. Two had much larger fins than the others and were probably males. The others were possibly females. We could see no calves.

The two seals lying on the floe took no notice of the whales until one heaved up the floe and broke it into three pieces. Then one of the seals became alarmed and hurried to the other's side as though for protection. We were very surprised to see the floe lifted up and hardly believed that a whale of the size of a Killer could have done it until it happened a second time a few minutes later. This time the floe was broken into a dozen pieces and there was no doubt as to who was responsible. The floe was roughly circular and some 80–90 feet in diameter. It must have been 2 or 3 feet thick. The Killers must be extraordinarily powerful for their size to have lifted up such a weight. One of the seals slept peacefully in spite of all this upheaval and rocking.

No doubt the whales deliberately broke up the floe with the intention of getting at the seals, but it is curious that when they had reduced the floe to such a state of disintegration that it would have been an easy matter to have secured the seals they made no further attempt and eventually made off south together. Several times they had poked their heads out of water quite near to the third seal, but this one, also, seemed to take no notice and suffered no harm.

One note made at Nansen Island is interesting. On 5 March 1922, we killed a Blue Whale near Two Hummocks Island. Four or five Killers appeared, but did not attempt to attack the dead whale. The week before, a Killer had taken a large piece off the nose of a whale moored alongside the catcher and we hoped to see a similar performance.

BOTTLENOSED WHALE (*Hyperoödon rostratus*)

This species was seen once on 8 March 1922, off Cape Kaiser, where there were several swimming together southwards.

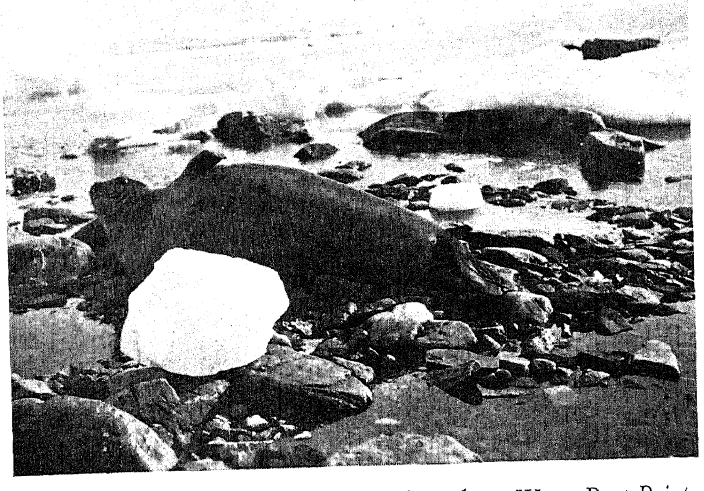
ELEPHANT SEAL (*Mirounga leoninus*)

On 26 December 1920, during our short stay at Deception Island, we saw one Elephant Seal. It was lying on the shore by the large penguin rookery near 'Sewing-Machine Rock'.

The notes which follow were all made at Water-Boat Point. (31. 1. 21.) Large one seen near Coal Point. (3. 2. 21.) One about 14 feet long lying on the rocks. (17. 2. 21.) One about 10–12 feet long came up near the hut. The skin was cut about in places, evidently old wounds. (10. 3. 21.) One on east side of Coal Point.

When we returned to the Island from a visit to Andvord Bay on 7 February, we found a large male Elephant Seal lying on the rocks near Coal Point. He was still there on the 17th, when we roused him and he went away. His skin was filthy, for he had been lying in his own dung. His teeth were bad and the stench was terrible. He returned to Coal Point the following day and took up quarters near his former position. On the 20th Lester drove him into the sea but next day he was back at his first position, looking much healthier. Frequently he snorted and raised himself to look around. He remained there until 2 March when he left for a swim and we could hear him blowing in the shallow water. He was back at Coal Point on the 3rd and remained until the 7th when he had another swim. He returned on the 9th. The last time we saw him was on the 11th when he left his resting-place for good. His annual moult had finished.

(17. 3. 21.) Young male on the beach. He measured about 11½ feet. (28. 3. 21.) Young male about 6 feet long has been



31. *A young male Elephant Seal on the rocks at Water-Boat Point*

32. *A female Weddell Seal*

lying on the Island. (23. 4. 21.) Young one on the Island, about 6 feet long, with several scars on its body. (25. 8. 21.) A male and a female close together near the tent. (24. 9. 21.) Large male on the snow at Coal Point. He measured between 14 and 15 feet long. (30. 9. 21.) Small male on the rocks. (4. 10. 21.) Male on edge of ice in Bay all day. (6. 10. 21.) Large one on ice in Bay all day. (7. 10. 21.) All day a male about 10 feet long has been lying on the ice-foot. A large one also visible on Round Island. (26. 10. 21.) A large specimen on an ice floe in the Channel. (2. 11. 21.) A large male came up on shore at Coal Point. He measured about 15 feet long. (13. 12. 21.) Large male came up on the West Rocks. (4. 1. 22.) One seen on the rocks. (5. 1. 22.) Large one swimming north in the Channel.

The only time I saw an Elephant Seal during our period at Nansen Island was on 5 March when we were out whaling and saw one near Small Island resting with its head upright above water.

LEOPARD SEAL (*Stenorhynchus leptonyx*)

The occurrence of Leopard Seals was influenced by the penguin rookery at Water-Boat Point. We saw them in March, April, June, August, September, October and November. As the rookery became populated for the nesting season their visits became more frequent. They were seen particularly often in November, the month during which the Gentoo Penguins, which were the main inhabitants of the rookery (there were comparatively few Ringed Penguins), made their massed fishing expeditions. The first eggs were laid by both species of penguin on 29 November 1921. It is a curious fact that between 25 November 1921 and the end of our stay at Water-Boat Point (13 January 1922) we never saw another Leopard Seal.

As we never killed any Leopard Seals, I am unable to make

any useful comments as to their markings, stomach contents and so on. When swimming they are much more lithe in action than either the Weddell or the Crabeater Seal.

Some of our log entries which describe their behaviour to the penguins and their methods of feeding on them are given below:

(6. 3. 21.) This evening we saw one just a few yards off the shore killing penguins and eating them whole. It caught them, raised its head, tossed them away, and finally ate them. Half-a-dozen were killed while we watched. (18. 3. 21.) One was lying behind a lump of ice in the small bay all the morning catching penguins. It caught several and tore them to pieces before eating them. (27. 8. 21.) One seen off the shore with a dead penguin which it was tossing about, like a dog with a rat, to remove the skin. (26. 9. 21.) We saw one off the shore eating a penguin carcase. The Leopard tore pieces off by shaking the body about and flinging it backwards and forwards; it devoured the pieces as it detached them. (7. 11. 21.) In the early afternoon two in the Bay caused a great deal of worry to a band of two hundred or so penguins marooned on the Bay ice which was separated from the mainland by a tide-crack. One of the Leopards climbed up on the ice, but did not try to make a capture, evidently realizing the penguins' greater speed on land. The other tried to climb up but did not succeed. We did not see a penguin caught. (8. 11. 21.) One was seen in the Bay in the morning. At noon, when many penguins were on the detached portion of the Bay ice and others were floundering in the crushed ice between the sheet and the Island, a Leopard Seal suddenly shot out of the water and back again like lightning. Apparently it failed to make a catch, as it did not appear with a penguin in its mouth. In the afternoon one was still in the Bay and another was near the West Rocks. (10. 11. 21.) Lester caught a glimpse of a penguin off the shore being dragged from a piece of ice into the water by a Leopard Seal.

The penguin may have been trying to escape by jumping on to the ice or it may have been resting there.

From the glacier slope the same day I had a good view of a Leopard Seal hunting in the Bay. Two penguins came close to the shore; one managed to jump to safety on the ice and the other darted off just as the Leopard shot out from under the ice. The Leopard would appear anywhere round the floe and look about. For a minute or two it lay quiet in a pool below where I was standing. I did not see it catch a penguin, although several parties came into the Bay. Apparently it cannot match their speed, its strategy is bad, and it is too impatient. It is only the unwary bird that is caught. Later we both watched it from the same place. Once it darted from the water on to a detached portion of the floe and lay there for a minute. On another occasion we saw two penguins swim to the floe, jump on to it, and get well clear of the edge before the Leopard charged.

(17. 11. 21.) A Leopard has been lying on a floe all night. In spite of the fact that the penguins were forming for their early morning fishing trip only a 100 feet away, it only woke up once or twice to scratch itself and look at half-a-dozen Dominican Gulls which hovered around it cautiously trying to snatch excreta. They eventually succeeded in collecting what they wanted. It was remarkable to see their wariness in approaching the Leopard Seal compared with their blatancy with Weddell Seals. They seemed nervous of possible attacks by the Leopard. One bird was in such a hurry to get away with its lump of excreta that it dropped it. (24. 11. 21.) In the early hours of the morning one was tearing and devouring a penguin near the West Rocks. After lunch one was lying on a small floe near the shore, with a dead Ringed Penguin by its head. A Dominican Gull and a Brown Skua were standing close by. The gull made a slight noise which attracted the Leopard's attention. It swung round on the gull, which flew off. The Leopard was

obviously afraid that its penguin might be stolen for it slept with it as a pillow. At times it held it in its mouth, at others it nibbled at it as though to see if it were tender. Directly the Leopard saw me it grabbed its prey and started into the water. It left the penguin to float for a moment or two, then looked round, snatched it again and vanished.

Later in the afternoon a Leopard was seen near the shore with a penguin carcase. It disappeared with it below water after taking a deep breath.

At Nansen Island and also when we were out whaling, we occasionally saw Leopard Seals. One or two of the more interesting observations are: (15. 2. 22.) Saw a Leopard Seal eating some whale offal which was floating on the water. The steward told us that once this season they had had a dead whale alongside with a Leopard Seal hanging to its tongue. (21. 3. 22.) While the chief engineer was out in the motor boat in the afternoon he saw a Leopard Seal seize a Shag which was resting on a piece of ice. At the first onslaught the Leopard pulled out the Shag's tail and then, as the bird was unable to fly, secured it easily.

WEDDELL SEAL (*Leptonychotes weddelli*)

Contrary to our anticipations, Weddell Seals were frequently seen at Water-Boat Point throughout the year. Had we known that we should be able to find them all the year round, it would have saved us a lot of work in the early days of our occupation, when we laid in seal meat for the winter; we could also have had regular fresh meat.

When we were killing seals for food we opened their stomachs to examine the contents, which would frequently include parts of or even a whole octopus. Large fish were common.

Whereas the Crabeater Seals were usually badly scarred

33. *The head of a male Weddell Seal*

from conflicts with Killer Whales, we did not see a single Weddell Seal with marks of the same kind. This may be accounted for by the fact that the Crabeater Seals prefer deeper water than the Weddell Seals; in the shallower places they are less likely to come into contact with the Killer. The Crabeater Seals were more alarmed at our presence than the Weddells.

It seemed to be an invariable rule for the seals to keep to the water in bad weather and come up on land during fine weather.

The Weddell makes various noises. It can produce a whistle on different notes almost as clear as a piccolo. Once we heard one doing this when we were 200–300 yards away. Another noise we frequently heard was a sort of gurgle produced by vibrations of the throat while the mouth was closed. Some observations on their powers of submergence were made. Just over three minutes was the longest time we ever timed a seal remaining below water.

An interesting observation of the extremities to which scavenging birds will go for food was provided by a female Weddell Seal which we saw lying on the ice on 26 October. Our attention was attracted when we saw Sheathbills pecking at her hind flippers. When they pecked she rubbed the flippers together and stretched them, but apart from looking round once she took no further notice. On walking close to the seal we could see a cut in the flesh between the toes. It was bleeding, and it was this that the Sheathbills had been pecking. There were also several small scratches. The birds were very brazen and just hopped back whenever the seal raised her tail. There was a Dominican Gull standing near the seal and although we did not see it peck at the flipper, it was obviously interested and may have done so when we were not watching.

The same day there was another seal on an ice floe in the Channel. Through the telescope I saw three gulls and one or

two Sheathbills around it. I could see that one of the gulls was pecking at some part of its body.

Four young Weddell Seals were seen. The first was on 7 November, when we found a female on the ice in the Bay accompanied by her offspring, a male about 4 ft. 8 in. in length. The youngster's 'baaing' was not unlike the bleating of a lamb or the crying of a human baby. He was a pretty little fellow with a woolly coat of light dappled brown. When we first came up to the pair the young one was sucking milk from its mother. After a little time the mother slid into the water, then popped her head out and called 'baa' to her son, urging him to leave the ice. This he did reluctantly, after a good deal of 'baaing'. The mother then climbed on to the Bay ice and flattened a piece of the edge to enable her offspring to climb on too. In an hour they had disappeared.

Weddell Seals were quite commonly seen at Nansen Island on the small islands round the moorings. As many as eight were seen at one time, but generally there would be not more than three or four.

We occasionally saw Weddell Seals when we were whaling in De Gerlache Strait. They were either swimming or else resting on pieces of drifting ice.

CRABEATER SEAL (*Lobodon carcinophagus*)

This species of seal was not seen as frequently as the Weddell. It is easily distinguishable from the Weddell by the different colour of its skin and its larger head. Most of those we saw were scarred with the marks of Killer Whales' teeth. As our records are restricted, I give all log entries at Water-Boat Point.

(14. 2. 21.) We killed a male on the beach. (1. 5. 21.) A Crabeater on the Island lying by the side of a Weddell seemed to resent our intrusion more than its neighbour did.

(16. 5. 21.) A young male has been lying on the ice-foot today. It had a bad wound caused by a Killer Whale. (17. 5. 21.) Crabeater with bad wounds on its back and sides on the ice in the Bay. (31. 5. 21.) One on ice in Bay. (1. 6. 21.) Male and female on ice in Bay. (23. 6. 21.) One on ice in Bay. (1. 7. 21.) One on ice in Bay. (2. 9. 21.) All day two Crabeaters have been lying on the ice in the Bay. One was a small specimen about 7 feet long. It was horribly cut about; two parallel gashes, cut down to the flesh, ran half-way round the middle of the body. On the right side, there were two healed cuts, one under the right flipper, the other low down the body. On the left side were two long, old, healed cuts running down from the back to the belly. One of these had been opened up by a new cut. The wounds must have caused the poor animal a lot of pain, for I saw it snort and snarl defiance at a second seal which was moving nearby. The other was slightly larger, about 8 feet long, with no wounds. (19. 9. 21.) One on ice at 10 a.m. but had gone by noon. (14. 10. 21.) Two lying together on an ice floe in the Channel. Both much scarred. (24. 10. 21.) One on ice floe in Channel. Two small gashes on side. (11. 11. 21.) One came up on the floe in the Bay and remained for an hour or two. We could see four gashes under the belly. (30. 11. 21.) Two on a floe near the shore. (7. 12. 21.) One swimming near the hut.

The following are the only records of Crabeaters seen while we were at Nansen Island:

(30. 1. 22.) One on an ice floe in Wilhelmina Bay. (1. 3. 22.) One lying on a floe near the factory. (9. 3. 22.) To the south-east of Two Hummocks Island we saw one swimming and another was lying on a piece of ice. (30. 3. 22.) Two on a piece of ice near the ship.

GENTOO PENGUIN (*Pygoscelis papua*)

ADÉLIE PENGUIN (*Pygoscelis adeliæ*)

RINGED PENGUIN (*Pygoscelis antarctica*)

MACARONI PENGUIN (*Eudyptes chrysolophus*)

Notes on the habits of the above four species of penguin are contained in a memoir written by the author: 'Notes on the Habits of the Gentoo and Ringed or Antarctic Penguins.' (*Transactions of the Zoological Society of London*, 1938, Vol. XXIV, Part 3, pp. 185–291.)

GIANT PETREL (*Macronectes giganteus*)

We saw Giant Petrels on most days that we were at Water-Boat Point from the last week in June onwards. There were seldom more than four to be seen at a time. Previous to this the only records were on 7 March when we saw an immature bird on the rocks, on 30 March, when one flew across the Bay, on 1 and 23 April when single birds were seen, on 20 May when another was seen, and on 1 June when two young ones were seen.

A few of the log entries are worth recording: (7. 8. 21.) A bird passed over this morning making quite a noise by clapping its turned-in feet together. (16. 8. 21.) In the afternoon we saw eight Giant Petrels, all with light-coloured plumage, standing on the north end of the penguin rookery. As we approached they ran along the ground one by one and took off from the edge of the ice-foot. Some had to propel themselves along the surface of the water before they could rise into the air, their bodies being so heavy. We were able to get quite close to the last two. One of these eventually made off, but was unable to rise and so paddled in the water before climbing on to a piece of floating ice. The other made

a thoroughly beastly exhibition of itself. Before leaving the Island it disgorged seven large mouthfuls of brownish muck. Still unable to rise, it made for a piece of floating ice where it disgorged another mass. After this we saw it paddle off northwards. The reason for the disgorging was to reduce weight for flying. We heard it trying to make itself sick each time before it disgorged, as a dog does when a bone sticks in its throat.

This was the first time we had seen a Giant Petrel land on the Island. The only other occasions were: (20. 8. 21.) We found three light-coloured birds resting on the Island. (21. 11. 21.) One settled on the shore. (23. 11. 21.) One with light plumage eating a penguin carcase on the rocks. Half-a-dozen others (light and dark varieties) were hanging about.

We rarely saw Giant Petrels at Nansen Island or while we were out whaling. As the entries are scanty I give them all: (21. 1. 22.) Two in De Gerlache Strait. (2. 3. 22.) One medium dark bird in the harbour. (4. 3. 22.) One off Cape Murray and another towards Liège Island. (5. 3. 22.) A dark bird seen north-east of Two Hummocks Island, two dark ones off Brialmont Bay, a medium one near Two Hummocks Island, and a dark one near Small Island. (6. 3. 22.) One dark and one medium dark one off Two Hummocks Island and a medium one off Cape Reclus. (7. 3. 22.) Two between Two Hummocks and Christiania Islands. A single bird nearer Liège Island. (8. 3. 22.) A medium dark one off Two Hummocks Island and two off Cape Murray, two off Cape Reclus and two near Nansen Island. (9. 3. 22.) Single birds, one light-coloured, seen off Two Hummocks Island and off Cape Murray. (24. 3. 22.) Two medium and dark varieties, in Brialmont Bay. Seven off Brabant Island. (25. 3. 22.) Seven off Brabant Island and five near Nansen Island. (30. 3. 22.) One in the harbour resting on the water. It had to disgorge before it could take off.

CAPE PIGEON (*Daption capense*)

Cape Pigeons were very common in the whaling harbour at Deception Island. Being scavengers, they were attracted by the whale meat and blubber. On 30 December 1920 we found nests with eggs on the west side of Challenger Pass.

We very rarely saw any at Water-Boat Point. The few records we obtained follow: (19. 4. 21.) One. (20. 4. 21.) Twelve flying northwards past the hut this morning. (30. 4. 21.) Several. (1. 5. 21.) Several. (11. 5. 21.) One. (1. 6. 21.) Several. (2. 6. 21., 10. 6. 21., 15. 6. 21., 20. 6. 21., 21. 6. 21., 22. 6. 21.) One. (23. 6. 21.) Saw a Cape Pigeon on two occasions today. (28. 6. 21.) One. It is a curious fact that it has always been at noon that I have seen the Cape Pigeon. (30. 6. 21.) One. (20. 7. 21.) Two flying about together. (14. 1. 22.) Several seen between Water-Boat Point and Nansen Island.

We found large numbers around the whaling factories when we moved to Nansen Island and although there might be fewer some days than others the numbers were considerable the whole time we were there.

A few Cape Pigeons followed the ship when we were making for home, but we lost them after 2 April, when we were in Lat. 53°54′ S., Long. 57°44′ W.

SNOW PETREL (*Pagodroma nivea*)

Having had no previous experience of studying wild life in the Antarctic, it was perhaps understandable that we were sometimes a little confused over certain of the less common birds. One of these was the Snow Petrel. It was not until 28 August that I realized that certain solitary birds which I had noticed flying about several times during the previous months, and had mistaken at a distance for Sheathbills or even

Terns, were actually Snow Petrels. Twice on that day I saw these birds flying south. On the 29th we both watched one and agreed on the species. On the following day we heard one utter its call, a rattling noise, quite unlike the Sheathbill's angry squawk. From the beginning of September onwards until our last record on 26 December they were to be seen daily, though never in large numbers. The most we ever saw on one day was eleven; usually there were only odd birds. At times two or three together flew north or south or hovered over the brash-ice.

A few of the log entries give details of their habits: (3. 9. 21.) Odd birds flying about all day. At 4 p.m. I counted eleven flying north in ones, twos and threes. (4. 9. 21.) Odd ones were about in the afternoon. (12. 9. 21.) Two hovering over a Medusa in the water. (7. 10. 21.) This morning I saw a bird land close to the screen. It kept pecking at something on the ground. (8. 10. 21.) Two birds fishing off the Island. (22. 10. 21.) At 10 a.m. one alighted on the north end of the Island for a few seconds (we seldom saw them land). At 6 p.m. I saw several flying over and landing on the pack ice along the shore. I counted eight, but there were probably more. 8 p.m. Three or four around. (31. 10. 21.) Six were gliding low over a belt of brash-ice along the shore, apparently searching for food. They kept flying over the patch again and again. (4. 11. 21.) Two or three flying over the brash-ice. (13. 11. 21.) A bird landed within 6 feet of the observer. (21. 11. 21.) 2 a.m. Single bird flew south. 3 a.m. Single bird. 5 a.m. Two. 7 a.m. Four hovering over brash-ice. 11 p.m. Single bird.

When we were transferred to Nansen Island we were able to verify our observations with Mr A. G. Bennett, who is an expert on Antarctic birds, as there were Snow Petrels to be seen there from time to time. We seldom saw them when whaling, my only observations being: (4. 3. 22.) One between Two Hummocks Island and Liège Island. (24. 3. 22.)

Two flying over loose ice off Cape Reclus and one near Cape Kaiser. (25. 3. 22.) Six seen between Cape Kaiser and Nansen Island, and two or three off Brabant Island.

On the journey home on 30 March we saw a single bird in De Gerlache Strait, our last record.

WILSON'S PETREL (*Oceanites oceanicus*)

This dainty little bird was very common at Deception Island, where hundreds might be seen skimming over the surface of the water looking for minute particles of food. They nest under rocks on the ground and lay a single white egg.

We saw Wilson's Petrels at Water-Boat Point, but never in large numbers. They were still with us on 2 April, but migrated soon after.

The first return from migration took place on 9 November, when we saw a bird pass the Island on its way south. We did not see another until 19 November, when my log reads: '9 p.m. 2 birds flew south singly. 10 p.m. Single bird flew south low over the ice. 11 p.m. Single bird flew south.' Each day after this they became more numerous. Throughout the rest of November, all through December, and until we left on 13 January, various numbers up to two dozen could be seen skimming over the surface of the water in the Channel.

At Nansen Island these birds were around the ships in large numbers right up to the time when we left on 30 March. They were numerous out in the Strait, particularly when a whale was caught, and followed in the wake of the ship on its way home.

BLUE-EYED SHAG (*Phalacrocorax atriceps*)

As we were between two rookeries of these birds, it was to be expected that we should frequently see Shags at Water-Boat Point. The two known rookeries were on Shag Point

(the south point of the entrance to Andvord Bay), and on Bryde Island (seen on 9 February). We formed the opinion that a rookery probably existed somewhere to the south of Bryde Island, perhaps on the mainland, as we often saw birds making for and coming from that direction.

We landed at Shag Point on 12 February. The Shags had their nests amongst those of the Ringed Penguins with whom they appeared to live in complete harmony. At this time the young were nearly full-grown. Generally speaking the Shags were more timid than the penguins.

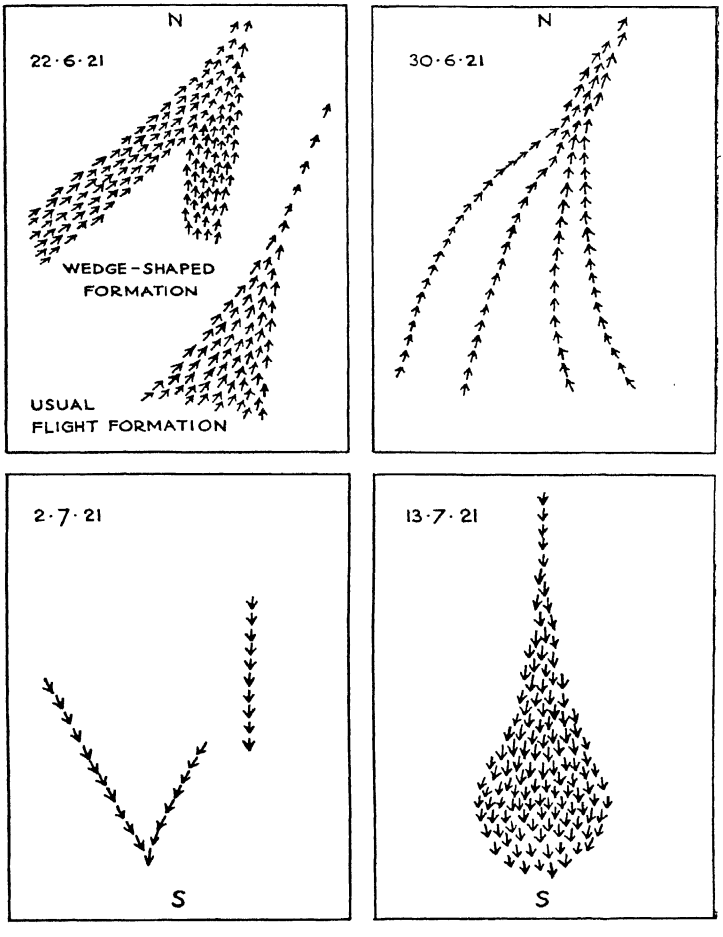
Occasionally we killed birds for food, their breasts and livers making good eating. The following are records of stomach contents: (11. 3. 21.) Fully-fledged young: Euphausids. (12. 8. 21.) Adult: fish, one about $4\frac{1}{2}$ inches long. (16. 8. 21.) Young: fish, one $4\frac{3}{4}$ inches long. (30. 8. 21.) Two young: both contained fish ranging in size from about 4 to 6 inches.

We kept careful observations of the movements of the Shags during the time we were at Water-Boat Point and gained some knowledge of their yearly life. We found that no migration took place. It must be realized that the movements we saw only represented what happened south of the rookery at Shag Point. Of what happened to the north of this we have no knowledge.

From the end of February until midway through July there was a period of large flight formations corresponding in some ways to what I have described as the Period of Massed Fishing Expeditions in my notes on the habits of the Gentoo Penguins. These group expeditions consisted of bands of anything up to two hundred birds flying in formation either northwards or southwards past the Island in search of fishing grounds. At times they landed for fishing in the Channel opposite our base. The movements are best explained by some typical entries in the log: (26. 2. 21.) A flight of about fifty Shags passed the hut heading southwards.

(23. 3. 21.) Nine flew northwards in a single line. (1. 6. 21.) Today I noticed about a hundred Shags flying about together just above the surface of the water. They came from the south, flew as far as the base and later returned south. They flew in a long line, one behind the other. (22. 6. 21.) At 10 a.m. I saw about two hundred birds swimming in a very compact body in the Channel to the west of the hut. A few rose one at a time and flew northwards towards Shag Point, and soon after the whole mass rose and flew in a long line in that direction. Meanwhile some few stragglers from various quarters made after them. In half an hour or less they all passed the hut again flying in a long line north to south. At noon I saw them flying in two roughly parallel lines. Suddenly they alighted on the water and formed a compact body. Several stragglers joined them. In a minute or two a few rose, one at a time, and headed south, and then the whole mass followed them. At about 1 p.m. they returned, flying past the hut in wedge-shaped formation (see sketch) heading in the direction of Shag Point. This was the last I saw of them. (23. 6. 21.) At 2 p.m. about a hundred flew past the hut southwards down the glacier and ten minutes later returned northwards. They were then bunched together more closely. (25. 6. 21.) Thirteen flying southwards past the base this morning. (30. 6. 21.) At noon saw a flight of about two hundred birds coming up from the south and keeping near the Glacier. They soon flew past the hut up the Channel, keeping quite close to the surface of the water in the formation shown in sketch. They made for Shag Point. (2. 7. 21.) Thirty-two birds flew south together in a more or less triangular formation with one small party in a straight line by the side. See sketch. (6. 7. 21.) At 1 p.m. a party of about a hundred birds flew over the hut and landed at Coal Point. They came from the south. (7. 7. 21.) Saw about a hundred Shags flying south along the shore of Lemaire Island. (12. 7. 21.) At noon I counted ninety birds

Flight formations of Blue-eyed Shags



settled on the water near the north point of the Island. They flew north in group formation and landed again on the water before finally making for Shag Point. A few, however, remained behind and continued fishing. At 2 p.m. about fifty were fishing off our island. Every now and then nearly all would dive under the water for fish. (13. 7. 21.) At 10 a.m. about a hundred and fifty Shags flew from Shag Point to the north-east point of Lemaire Island. At 11 a.m. I counted one hundred and thirty-two birds flying south in a line which was bunched in the fore-part but consisted of single birds flying head to tail in the rear (see sketch). They all landed in a bunch in the channel to the south of us. Stragglers arrived later. At the same time about a hundred birds were seen flying low from the north end of Lemaire Island to the north end of Coal Point. (14. 7. 21.) Watched four birds fishing off the hut. The average time a dive lasted was about 55 seconds.

From the middle of July until the end of August several birds were usually to be seen fishing in the Channel opposite our island. Sometimes there were only individual birds; at others any number up to twenty at a time. Only on three occasions did we see more, the numbers being about thirty, forty and fifty. There was a marked diminution in the number of birds seen flying north or south past the base. In fact, all told, with the exception of one party of twenty-eight on 20 August seen flying south together, we only saw eighty (forty-two flying northwards and thirty-eight southwards) passing between 16 July and 31 August. On the other hand, we did see a flight of fifty flying round Coal Point on 4 August, and another flight of the same number circling round to the north on 12 August. All these facts indicate that good fishing was obtainable within a short distance of Shag Point up to the limit of the new ice.

Between the beginning of September and 17 October we saw only three birds fishing in the Channel. One flight of

twenty-three birds was seen making south on 4 September, another of fifteen making north on the 14th, and one of twenty-eight flying north on the 29th. In October we had flights of fifteen flying north on the 9th and three flights of twenty-two, twenty, and eight all flying north on the 11th. Generally speaking, we more often had birds passing by us to the north than to the south. In fact, two hundred and sixty-two birds were seen flying northwards and only sixty-eight southwards, in this period. The general change in habits seemed to be connected with proximity to the nesting season.

On 17 October we found two adults on the north end of the Island. Evidently they were mates, for they were pecking at each others' beaks and bowing to one another; first turning their necks inwards towards each other and bowing towards their tails, then turning their necks round and bowing forwards. Although from time to time we had had birds resting on the islands on their way north and south, this was the first occasion on which any signs of courtship behaviour was observed.

From the middle of October until the end of November we saw birds fishing in the Channel on only three occasions. Doubtless food could be obtained close to the rookeries. On most days during the rest of October three or four birds were seen flying northwards, but from November onwards only one or two were seen each day. An exception was on November 4 when a flight of sixteen flew over the Island northwards. Much the same thing happened with birds flying south, except that there were about three-quarters of the number of those flying north.

Two log entries during this period are interesting: (4. 11. 21.) At 4 a.m. six birds flew south. Five others were fishing in the Channel. Thirteen were standing on the north-west corner of the Island. Before I approached they flew off and went fishing a little to the north. At 5 a.m.

sixteen flew over the Island in a northerly direction. At 10 a.m. eight birds came from the north, five turned back when they reached the Island and the remaining three continued south. (27. 11. 21.) At midnight two birds came up from the south, circled round over us and then returned south.

Signs of nest-building became apparent on 1 December when two birds were seen flying north together, each with a bunch of seaweed in its beak. Again on the 5th a bird flew north with a large piece of seaweed in its beak. We never saw a bird carrying seaweed in a southerly direction. At about this time there was an increase in the number of birds seen fishing in the Channel at varying times in the morning, invariably between 2 a.m. and 7 a.m. up to 15 December, after which fishing visits became less regular and were not confined to the early morning. I feel certain that they were also less frequent. Unfortunately we were unable to make observations in the early hours during the second half of December owing to the fact that tidal observations were no longer being made. We saw fishing parties of seventeen on 14 December and of twelve on the 15th.

Between 1 December and 13 January, when our observations at Water-Boat Point ended, we saw only up to half-a-dozen birds flying in either direction each day. They almost invariably flew alone. Again there were more flying northwards than southwards.

When we moved to Nansen Island in January 1922, we renewed acquaintance with the Shags, which were commonly seen in the neighbourhood. On Saddle Island, which lies in the entrance to Wilhelmina Bay a little to the south of Nansen Island, we found a small rookery consisting of six nests in which the young were well developed on 21 January. There was another small rookery on Cape Reclus. The young were in an advanced stage of growth and still retained their down on 30 January.

One other observation at Nansen Island completes our records. On 21 March a Leopard Seal was seen to seize a Shag which was resting on a piece of ice. At the first attack the Leopard pulled out the Shag's tail and since the bird was then unable to fly, secured it easily. It was interesting in view of the fact that, including our observations at Water-Boat Point, it was the only record we obtained of a Shag being attacked by an enemy.

DOMINICAN GULL (*Larus dominicanus*)

There were numbers of these birds at Deception Island, which was one of their breeding places. There were many nests on the cinder mounds and hills between the whaling harbour and Pendulum Cove. They lay either two or three eggs in a nest made of feathers, moss and lichen. The nests were in easily accessible places, often on flat ground but always well above sea level. On 14 December we found a nest containing two chicks which had only been hatched for two or three days; another was pecking its way through a shell. There were still many nests with eggs in them.

When we moved to Water-Boat Point we found these gulls in fair numbers. We also discovered breeding places at the bottom of Andvord Bay and on Bryde Island. Their feeding habits were similar to those of the Brown Skuas.

No migration took place during the winter months, but whereas on 2 April the gulls were still with us in their normal numbers (up to about two dozen), on 1 May all but a few seemed to have left us. On 11 May I noted that we had not seen any lately. We saw, however, six flying south on the 19th, a single one on the 20th, several on the 22nd, several on 1 June and half-a-dozen on the 8th. On 17 June I counted twenty-six resting on some sheets of new ice to the north of the base. Between this date and the end of September, when they became rather more numerous,

occasional birds were seen, the most observed at any one time being six. It was only rarely that they settled on the Island; usually they kept to the water or stood on the rocks by the shore. We counted as many as twelve on 11 October. Gradually they increased in number. On 20 October we counted twenty-four around. Some landed on the Island. From then onwards they were numerous. I recorded that it was noticeable that the gulls were becoming more venturesome than during the previous months when they rarely landed on the Island.

Immature as well as adult birds were seen, the latter being more abundant.

A decrease in numbers became apparent from the middle of December when my log records only a few each day, ten being the maximum.

Occasional entries in the log give insight into the habits of these gulls: (7. 8. 21.) A gull was pecking at a dead Sheathbill while another was hovering around. (11. 8. 21.) Saw two gulls feeding on a dead Sheathbill. (14. 8. 21.) These birds are much more timid than the Sheathbills and do not come near the hut. A Sheathbill was feeding on a dead Shag near the hut while a gull stood some distance off, evidently afraid to go near. (12. 9. 21.) This morning there was a large Medusa near the shore and three gulls were hovering over it for food, mewing as the gulls did around the whale carcases at Deception Island. (28. 9. 21.) Two were having a quarrel in the air. Several times they swooped down on each other and ended by colliding in mid-air. (26. 10. 21.) Saw three gulls standing by a Weddell Seal which was lying on an ice floe in the Channel. Through the telescope I could see that one of them was pecking at a wound or sore on the seal which seemed to be taking no notice. (29. 10. 21.) Saw two chasing a Skua. (30. 10. 21.) Several on the Island eating penguin guano. (10. 11. 21.) On three or four occasions during the day these birds were

seen mobbing Skuas. (14. 11. 21.) About fifteen gulls flying over a school of Killer Whales in the Channel, evidently looking for any tit-bits the whales might leave. (17. 11. 21.) An interesting incident between Dominican Gulls and a Leopard Seal is recorded under the description of the latter's habits. I also saw two adult gulls engaged in a fierce fight on the Bay ice. They turned round and round with wings outstretched. At one time one bird had the other's beak in its own. (24. 11. 21.) Ten round a Leopard Seal which was devouring a penguin. (4. 12. 21.) Three near some seal dung. (8. 12. 21.) A dozen on floes around which Killer Whales were swimming while trying to reach some Weddell Seals. Gulls no doubt hoping for leavings. Four also round a seal. One was eating dung. (9. 12. 21.) Saw a gull eating the contents of a penguin egg. On my approach the gull took the egg in its beak and flew away with it. (13. 12. 21.) One on the West Rocks with a penguin egg in its beak. It flew away, but after a while dropped the egg into the sea. On another occasion a bird was seen eating a penguin egg and another time one landed with an egg in its beak and was about to eat it when a Skua flew down on top of it and frightened it away. The Skua then broke the shell sharply, but carefully, and leisurely ate the contents while the other looked on. (14. 12. 21.) Saw a gull carrying a penguin egg away in its beak.

All the time we were at Nansen Island Dominican Gulls were around the whaling harbour in large numbers, two hundred and more being commonly seen at one time. They were not so numerous in De Gerlache Strait where there was apparently not so much food. On 30 January we saw three or four nests without eggs at two places on North and South Nansen Islands. The nests were made of feathers and pieces of seaweed. An empty nest was found on a small island near the south shore of North Nansen Island on 7 February.

On the day we left for home (30 March), there were a few in Svend Foyn Harbour, but none were seen in the Straits, nor did we see any more.

BROWN SKUA (*Catharacta skua*)

Skuas were very common in the harbour all the time we were at Deception Island, where they had unlimited supplies of whale flesh on which to feed.

From the time we arrived at Water-Boat Point until April there were fair numbers of Skuas about. During the penguins' nesting season they were continually hovering round the rookeries on the look out for an uncared-for egg or a young bird to carry away or feast off on the spot. They would peck out the eyes of the young penguins. When we were cutting up seals they would hover around and directly we had gone a little way off would peck at the meat, and if the head was there, the eyes of the seal.

On 31 January we found a nest consisting of small pieces of stone, with two small slate-coloured young in it near the top of Mount Lunch-Ho! While we were inspecting the young, the mother bird kept swooping down over our heads. On 7 March I recorded in the log that there were many young birds flying about. Their plumage was lighter than that of the adults. On 2 April I noted that Skuas were still with us in their usual numbers, but by 1 May they had deserted us and there were only one or two about. Migration was complete by 11 May.

The first return from migration took place on 27 October, after an absence of five and a half months. Single birds were seen up to 9 November when we saw three. After this they were never very numerous; at the most we counted a dozen at once.

There was always animosity between the Brown Skuas and Dominican Gulls, and a good deal of fighting went on

between the Skuas themselves, though mates seemed to tolerate the sharing of food. When out whaling we noticed that whenever a whale was killed any number up to half-a-dozen would appear around the dead body.

ANTARCTIC TERN (*Sterna vittata*)

On the mounds of volcanic ashes at the back of the magistrate's hut on Deception Island there were plenty of nests on 16 December, but few eggs. We found one clutch of two and a few odd ones, as well as one nest with a bird just hatched and the second egg unhatched. The nests were simply collections of rock fragments in a hollow; sometimes the eggs were laid on the bare ground. It was interesting that there should be so many empty nests. I do not think the crew had taken the eggs as they were too far from the ships. We saw several Terns mobbing Dominican Gulls, so the latter may have been responsible.

My first record of their occurrence at Water-Boat Point was on 3 February. From then until 24 July flocks of varying sizes were seen. None was seen after 24 July until 19 September, when three flew over the hut.

From then onwards until 13 January 1922 there are daily records of Terns being seen and their shrill cries heard. There were never a great number on any one day, up to a dozen being usual. They would either pass us flying north and south or would circle or hover over the water or loose ice in the Channel.

At Nansen Island Terns were occasionally seen, but never more than three or four at a time. When we were whaling in De Gerlache Strait from 4 to 9 March we saw several each day. On 24 March there were many flying around in the Strait, and on the 25th Terns were fairly common between Cape Kaiser and Nansen Island.

WATTLED SHEATHBILL (*Chionis alba*)

When we were at Deception Island on 20 December, Mr J. E. Hamilton found a nest with three eggs. The bird is quite common on the island and is very tame.[1]

At Water-Boat Point they were with us from 30 March up to 4 December, after which we saw no more. We did not find a nesting-place round our base or on the journeys in the life-boat to Andvord Bay and Bryde Island. We did, however, find six when we landed at Shag Point on 12 February; these may have been nesting there.

In flight they were very noisy, making an audible sound with their wing flapping which was very rapid. For food they lived on any offal they could find, and were driven to all sorts of extremities in hard times.

Our rubbish heap was popular and they caused us a good deal of annoyance, when food was scarce, by alighting on the hut roof and pecking at the canvas to extract globules of oil from it. The canvas had been dressed with seal-oil. They became so annoying in this habit that we killed a few, but their places were immediately taken by others. The little cannibals took advantage of the situation to feast off their dead comrades. 16 August was one of the rare occasions on which we saw a bird alight on the water. On the new ice were the remains of a Sheathbill and the bird we were watching was endeavouring to get a meal while a Dominican Gull was doing its best to prevent it. The Sheathbill kept circling round and each time it landed the gull ran after it. Eventually the Sheathbill artfully decoyed the gull a little way from the dead bird and then speeding back took a scrap. It settled on the water near by to eat it. After a while it jumped from the water on to the ice, secured another morsel, and alighted on the water again to eat it.

[1] Excellent photographs of a group of Sheathbills appear in *En Hvalfangerfaerd Gennem Troperne til Sydishavet*, by A. K. Nielsen, pp. 104, 105. The author accompanied us on the outing when these were taken.

Variations in their diet are shown in further entries: (19. 8. 21.) We counted a dozen birds at Coal Point, walking among the penguins. We noticed a curious fact which explained why they were continually walking round the rookeries, in between the penguins. A penguin and a Sheathbill were close to one another. The penguin excreted and immediately the Sheathbill turned and took up a beak-full. It was all done in a second. (26. 10. 21.) We saw several pecking at a wound on the hind flipper of a female Weddell Seal. A full description of the incident is given on p. 263. (1. 12. 21.) Three birds on the Island, all eating penguin guano.

As already mentioned we did not see a Sheathbill at Water-Boat Point until 30 March (we arrived on 12 January). From 12 April onwards there were several making our islands their headquarters. On 8 June I noted that of late we had had only one or two birds with us, although a fortnight before there had been as many as two dozen. From this date until the third week in August the most we saw was seven on a single day. We saw birds practically every day, but not more than from one to six at a time. With a greater abundance of penguins on the Island rookery and at Coal Point, the numbers of Sheathbills increased.

From mid-August until the end of October we saw any number up to sixty or so in a day at one or other of the penguin rookeries. There were, however, days when numbers were reduced to ten and under, and even to single birds. They were particularly common in the rookery at Coal Point.

On 28 October five birds were seen, none on the 29th and only one each day on 30 October, 1, 6, 8, 17, 23, 24 and 29 November. There were three on 1 December, one on the 2nd and one on the 4th. This was the last date on which we saw a Sheathbill. As eggs were found at Deception Island on the 20th, it is clear that in the nesting season the flocks break up.

We never saw a Sheathbill during our stay at Nansen Island; nor when we were whaling in De Gerlache Strait.

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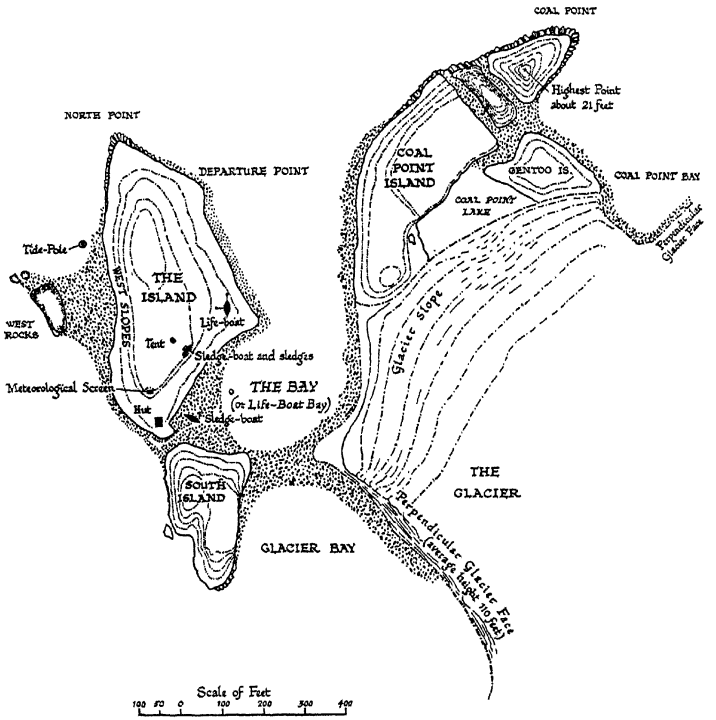
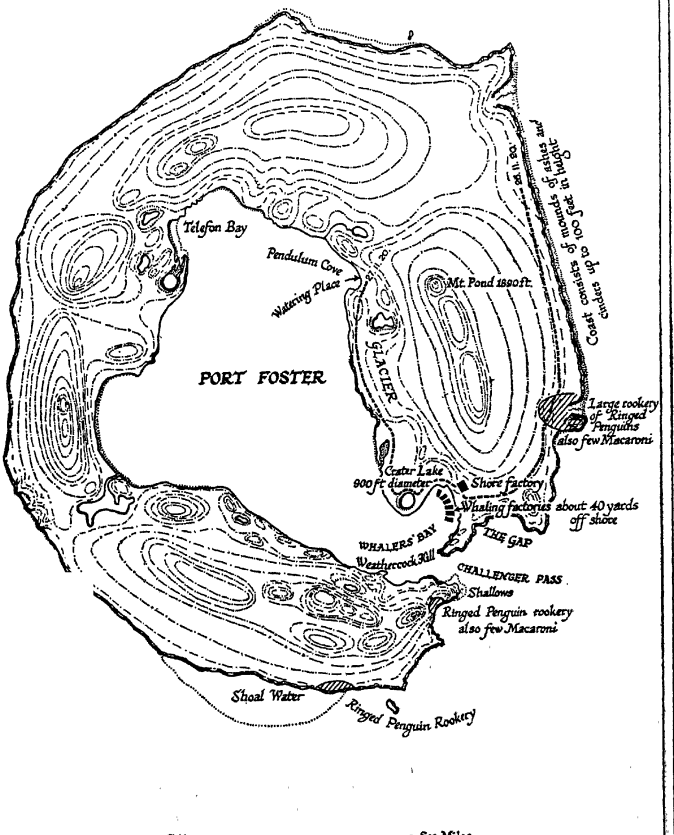
SKETCH-MAP OF WATER-BOAT POINT



DECEPTION ISLAND



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